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The Health Bulletin

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Vol. XLI

JANUARY, 1926

No. 1

HEALTH—THE STATE'S GREATEST ASSET



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FREE HEALTH LITERATURE

The State Board of Health publishes monthly **THE HEALTH BULLETIN**, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
Cancer	German Measles	Scarlet Fever
Catarrah	Hookworm Disease	Smallpox
Care of the Baby	Infantile Paralysis	Teeth
Constipation	Indigestion	Tuberculosis
Colds	Influenza	Tuberculosis Placards
Clean-up Placards	Malaria	Typhoid Fever
Chickenpox	Measles	Typhoid Placards
Diphtheria	Pellagra	Venebral Diseases
Don't Spit Placards	Public Health Laws	Water Supplies
Eyes	Prenatal Care	Whooping Cough
Flies		

FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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PNEUMONIA

We are just now reaching the season when pneumonia is beginning to take its most terrific toll of human life. During January, February and March more people die from this disease than during the remaining nine months of the year. During these three months of 1925 pneumonia killed, in North Carolina, at the rate of over five hundred per month.

If you live in a village of five hundred people, think of an entire village the size of yours, men, women and children, being completely wiped off the map in this State each month during January, February and March. Remember that is just what this one disease, pneumonia, is doing. The total is approximately 3,000 deaths per year.

Pneumonia can much more easily be prevented than cured and prevention is a personal matter depending on each individual. The doctor will do all he possibly can to relieve a patient that is sick, but preventing the disease is a matter entirely in the hands of the individual. The doctor cannot do that for him any more than he could eat his food for him or sleep for him.

In one series of 1408 pneumonia patients, taking them as they came 852

gave a history of having been ill with a common cold for several days previous to the development of pneumonia.

Some important measures in preventing pneumonia which every one should know are:

1. Consider seriously and treat adequately all "common colds."
2. Dress to suit the weather, remembering that clothing is for protection, rather than alone for adornment.
3. Avoid sudden chilling, wet feet and wet clothing.
4. Vitality, or resistance to infection, is greatly lowered by lack of exercise, excessive fatigue, loss of sleep, excesses of any kind, and poor food.
- During dangerous seasons be especially careful to maintain vitality at its very highest.
5. Avoid all unnecessary contact with persons sick with pneumonia, flu or colds. They are contagious.
6. Keep hands clean.
7. Do not let fingers or anything else except proper food and drink enter the mouth or touch the lips.
8. Avoid overheating of living rooms and be assured that there is ample ventilation to keep the air fresh.

BILIOUSNESS

The term "biliousness" may not be a strictly scientific word but hearing it calls to the mind of every man, woman and older child in North Carolina a certain definite and unhappy picture.

By whatever name it may be called there is lack of appetite, a sense of malaise, indisposition to either mental or physical activity, drowsiness, often giddiness, a bad taste in the mouth and a bad breath, the tongue is cov-

ered with a rather thick slimy coating, there is inactivity of the bowels and a peculiar "bilious" color in the skin, dark circles under the eyes and usually there is a severe and distressing headache. Sooner or later there will be nausea and vomiting. The vomited matter is a liquid, yellow, or greenish yellow in color and as "bitter as gall." This condition has been seen by every one and experienced by most persons.

A condition of this sort confronts the "family doctor" more often, perhaps, than all others combined.

Gallstones forming in the gall bladder sometimes stop up the gall ducts and prevent the flow of bile into the intestines. This dammed up bile is then reabsorbed into the blood and carried throughout the system and deposited in every tissue of the body. This deposited bile pigment is what gives to the skin and the whites of the eyes that "yellow as a pumpkin" jaundiced color.

In at least a great many cases of so-called "biliousness" there is a slightly analogous condition caused by a concentration of the bile. This interferes with its normal flow and results in its reabsorption into the blood, to be partly deposited in the tissues and partly to be re-eliminated by the liver. With each cycle, of course, it becomes more and more concentrated. In biliousness the bile is not dammed up as in gallstones but because of the impeded flow of the thickened bile there is reabsorption into the blood and a deposit of bile pigment into the tissues.

Because of the inactivity of the bowels in this condition there is necessarily a reabsorption also of the poisons from uneliminated waste in the intestines and this poison or toxin together with the reabsorbed bile gives rise to many of the symptoms noticed.

Inseparably linked with the word biliousness is that other word, calomel. Calomel has a double action. It is a purgative and also a cholagogue (bile driver), hence calomel in "biliousness" empties the intestinal tract and also liquefies the bile and stimulates the liver cells to excrete more bile. Thus with the intestines emptied the bile ducts and gall bladder emptied and the liver cells filtering out of the blood the accumulated bile the condition speedily clears up.

Calomel, however, has its disadvantages. It is of itself a very poor purgative and should never be taken, except upon the specific advice of a physician. When taken into the stomach and absorbed into the blood it is an excellent stimulant to liver activity. Its absorption is rather slow, hence should be taken in the minimum needed doses to accomplish this purpose and given

time to be absorbed before a purgative is taken to empty the bowels.

Epsom salts and castor oil are excellent purgatives. They do quickly and thoroughly empty the intestinal tract but they have no stimulating action on the liver and do not liquefy the bile. These drugs by themselves will not clear up the symptoms of the condition popularly known as biliousness.

If, however, the bowel contents are never allowed to stagnate, then biliousness is much less likely to occur, and such drugs are much more valuable in preventing biliousness than in curing it. In recent years a mechanical method has been devised of draining the gall bladder without the use of purgation. It consists in the passage of a small tube by swallowing it very like a stomach tube through the stomach and into the duodenum (the upper small intestine). The procedure is simple and usually gives the patient little inconvenience but does require some time. In cases where indicated it often gives most happy results.

"Biliousness" may not be the proper name for it but the condition described is very real and very common. It is relieved by anything that empties the bowels to stop further toxemia and by emptying the gall bladder and clearing from the body tissues the accumulated bile and waste poisons.

The health officer who operates in a community where a substantial proportion of the citizens have received basic instruction in preventing disease and in the general activities of the health department is able to accomplish results in the saving of lives of which we have scarcely dreamed in the philosophy of the past.—DR. RAY LYMAN WILBUR.

Education is the basis on which any dental health program should be developed. It should begin in the prenatal clinics and should extend through the school life of the child. Filling a cavity is palliative treatment unless one understands and practices the fundamentals of preventive dentistry.

—WILLIAM A. GRIFFIN, D. D. S.

"I NEVER THOUGHT OF THAT"

One Reason Why Over Ten Thousand People Die Each Year in the State From Degenerative Diseases is Just Plain Carelessness

"Hello, Sam, what's wrong with you? Been in a wreck?"

That was the greeting of a friend as Sam Jones limped painfully along towards his office on a snappy December morning.

"No, nothing like that, Bob," Sam replied. "Fact is, it's nothing but a touch of rheumatism. Sure is talking to me this morning, though. Been troubling me a little in that left knee for some little time. Now it's moved on up into the hip, and it's just about all I can do to travel this morning."

"What are you walking for? Where's the car?" Bob wanted to know.

"It's over at the shop. I'm having it gone over thoroughly, like I do every three months. Say, Bob, that's the best investment I ever made. You know, I've had that car something over three years now, drive it pretty constantly, and repairs on it haven't amounted to hardly anything. Every three months I set it in the shop for an inspection, and they fix up what little minor trouble there may be, and it runs just as sweet now as it did when I got it. It's mighty good practice, and cheap insurance, I tell you."

"How long since you have had a doctor look you over?" Bob inquired.

"Let's see now, I don't believe I've had a doctor since I had the flu back in 1918. There's been nothing wrong with me except this rheumatism here lately."

"Well, then, do you think more of your car than you do of yourself?" Bob wanted to know. "Or do you think at all? Here you have your car carefully looked over every three months to keep it from going bad, and you let yourself go for seven years. Why don't you apply the same reasoning to yourself as you do to your car? If you had you probably wouldn't be so crippled up with rheumatism that you can hardly walk down town. Besides, that rheumatism is only a symptom of something

wrong inside. Better go right on over and have a careful examination made."

"Bob, I reckon I'm just a plain fool, I never thought of that. I'm on my way right now."

There are thousands in North Carolina just like Sam Jones. They go on day after day, and the days run into weeks, and months, and years, and they never think of giving their bodies a square deal. Their automobiles cost money, and so they spend money keeping them in good order, and spend money in preventing trouble from developing. But only when sick, and too sick to work, do they seek relief. Then they want a quick job from the doctor, one that will put them back on their feet in a hurry, regardless of what may be the hidden trouble.

At the beginning of another year, it is timely to suggest that a physical accounting be made. What are your health assets and liabilities, and how do your body accounts balance? You would not think of running your business without keeping some accounts, and the annual inventory is routine. Why run your body without getting at least a yearly balance to show if there are any losses or gains?

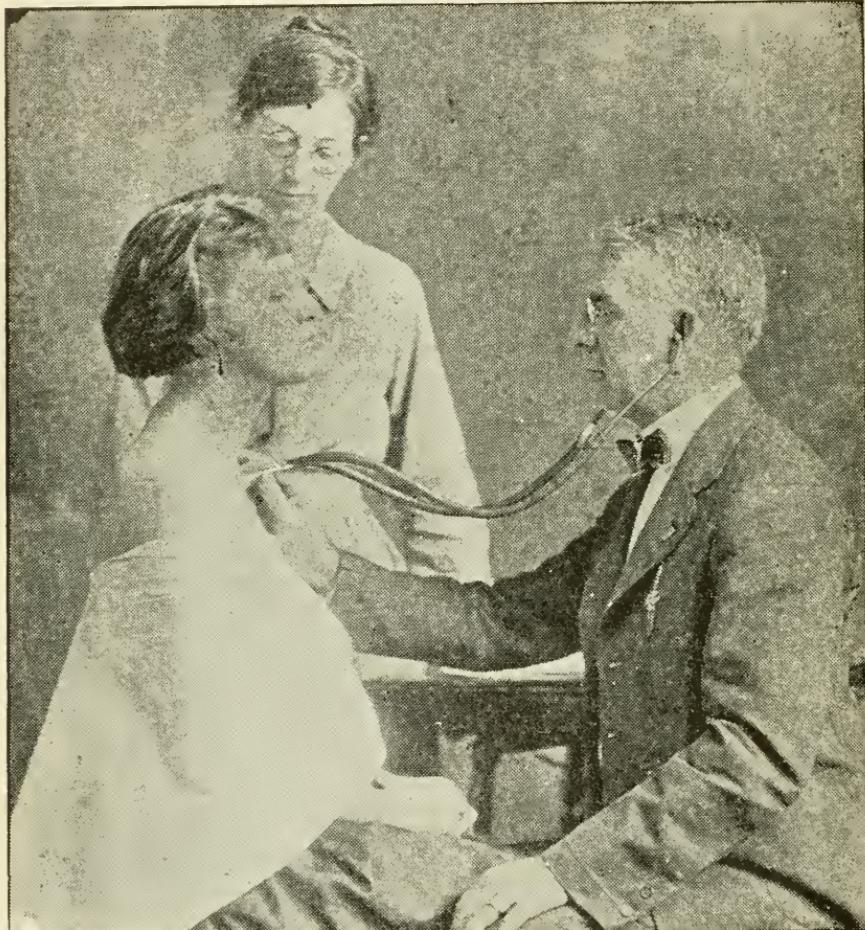
It is a well-known fact that thousands of lives in infancy and childhood have been saved in the past few years by the spread of knowledge concerning the care of babies and child hygiene, and the medical inspection of school children. Not only have thousands of lives been saved, but these school children have been made healthier and more efficient in their school work.

But while the death rate among children has been coming down rapidly, the death rate for adults has been climbing. We are saving infant life and wasting adult life. The "old age" diseases are creeping into middle life and carrying off men and women at the time when their lives are most useful, and when they should be enjoying life

to the fullest. At least a half million American citizens die annually from preventable or postponable diseases of the heart, arteries, kidneys and cancer.

Here in North Carolina last year there occurred 11,964 deaths from a group of five preventable or curable diseases to which persons of middle life

It is estimated that 75 of each 100 deaths between the ages of 20 and 65 are caused by one of these diseases. The majority of the more than eleven thousand occurring from these causes were premature. They should have been prevented, cured, or postponed to beyond seventy years of age.



THOROUGH CHEST EXAMINATION

Important part of physical examination to detect incipient tuberculosis.

are especially susceptible. The figures are as follows:

Nephritis	1,804
Heart Disease	3,661
Apoplexy and arterio-sclerosis	2,509
Cancer	1,289
Tuberculosis	2,701
Total	11,964

Wonderful progress has been made in North Carolina in improving the health of children; in the control of the communicable diseases; in bettering sanitary conditions throughout the State. There is much yet to be done, however, and an important next step must be towards the raising of the physical standard. By learning the lesson of prevention we can get at these de-

generative diseases in time to stop or cure them. Through a periodic physical examination, at least once a year, bodily defects and the early signs of the "breaking down" diseases of the heart, arteries and kidneys can be detected and the necessary remedy applied.

The cost is negligible. Thirty minutes to an hour of your time, and a modest fee to the physician is all. The gain to you may be ten or twenty years of added life. It may be that you have no symptoms so far as you know, and

don't feel sick, and yet a thorough physical inspection may reveal the first indications of a serious disease at the time when it may be headed off or cured. The 1,289 who died of cancer last year did not know they were sick until it was too late. Yet every one of them could have been saved had their trouble been discovered in time.

Give yourself a square deal. Treat your body with as much care as you give to your car. Start the New Year with a physical inventory.

WINNING THE TYPHOID FIGHT

How North Carolina Has Succeeded in Making Typhoid Fever Comparatively Unknown in the State

In the past eleven years the death rate from typhoid fever in North Carolina has been reduced by 72 per cent. From its position near the top in the United States the State has been pulled down to a place among those states having the least typhoid fever, and now heads the list of the Southern States with the lowest death rate from this particular disease.

To those whose memory goes back to the early days of the present century when typhoid fever was accepted as a natural accompaniment of the summer months, the question naturally arises, how has this disease been so nearly conquered? A prominent newspaper editor of the State last summer remarked that he could remember when every week his paper carried the report of five or six or more deaths from typhoid, and now even a case in the county was unusual.

The intensive fight against typhoid fever began in 1914, when definite plans were adopted to be carried into effect the following year. Vaccine for the prevention of typhoid fever had been thoroughly tested and its efficacy established. So the State Board of Health decided to attempt mass immunization on a large scale.

Under the guidance of Doctor G. M. Cooper, then serving as director of rural sanitation for the Board, contracts were made with seventeen counties under the terms of which the coun-

ty authorities appropriated sums sufficient to pay the expenses of the field agents of the Board. Dispensary points in each county were selected that would be as convenient as possible for the people of each section to reach. An advertising campaign designed to give full information with regard to the prevalence of the disease, its dangers, and the means of prevention was inaugurated. In June the actual work was begun.

In these counties a total of 52,000 complete inoculations were given that summer. That is, that many persons received three administrations of typhoid fever vaccine, the doses being given at intervals of one week. The response on the part of the people was enthusiastic. The results were much greater than had been anticipated, and this first year's campaign was considered an unqualified success.

For the first time in the United States the effort had been made to reach a large mass of civilian population with preventive typhoid treatment. It was demonstrated that such a campaign could be successfully consummated. Due credit should be accorded the county authorities who made this preventive work possible, and to the citizens of those counties who so whole-heartedly responded. The seventeen counties were Alamance, Buncombe, Cabarrus, Caldwell, Craven, Cumberland, Durham, Edgecombe, Guilford, Henderson, New

TABLE 1

Check mark indicates counties in which typhoid vaccination campaigns were conducted by State Board of Health, or local county health department, 1915-1925.

Total complete vaccinations. 807,978.

TABLE 2

Twelve counties in which no typhoid vaccination campaigns was conducted, 1915-1925, showing death rate from typhoid fever by years for seven years, 1918-1924, inclusive.

COUNTY	1918	1919	1920	1921	1922	1923	1924	Population
Ashe.....	15.7	10.4	0.0	9.3	4.6	4.6	9.1	21,894
Cherokee.....	0.0	30.7	13.1	19.4	0.0	12.7	6.3	15,755
Dare.....	0.0	0.0	0.0	0.0	38.5	19.1	0.0	5,293
Graham.....	0.0	0.0	20.5	20.4	0.0	20.3	0.0	4,929
Haywood.....	3.9	11.7	0.0	0.0	4.1	8.2	0.0	24,644
Jones.....	21.9	0.0	10.0	19.8	19.5	9.6	9.5	10,463
Macon.....	8.4	24.4	0.0	7.6	0.0	22.8	0.0	13,208
Madison.....	74.5	24.8	0.0	29.8	14.5	9.9	14.9	20,083
Pender.....	40.6	5.7	20.2	6.7	6.7	20.2	27.0	14,788
Polk.....	0.0	0.0	0.0	0.0	0.0	10.7	10.6	9,385
Transylvania.....	0.0	0.0	0.0	31.1	20.3	9.9	0.0	10,280
Tyrrell.....	0.0	18.3	20.6	0.0	82.4	0.0	41.2	4,849

TABLE 3

Twelve counties in which typhoid vaccination campaigns have been most continuous and intensive, 1915-1925, showing death rate from typhoid fever by years for seven years, 1918-1924, inclusive.

COUNTY	1918	1919	1920	1921	1922	1923	1924	Population
Cabarrus.....	37.4	6.7	5.9	8.5	5.6	16.4	2.6	37,201
Cumberland.....	15.1	7.5	14.2	5.5	2.5	2.5	0.0	38,728
Durham.....	72.4	18.3	28.4	30.0	4.5	4.4	8.8	45,438
Guilford.....	24.2	19.8	11.3	14.6	15.4	13.9	9.0	87,975
New Hanover.....	29.5	39.6	7.3	2.3	11.6	13.7	4.4	44,599
Northampton.....	8.5	4.2	0.0	4.2	8.5	4.2	0.0	23,583
Pitt.....	19.5	16.8	17.5	19.1	25.0	16.3	18.0	49,846
Robeson.....	11.5	8.2	16.4	5.4	9.1	5.4	7.3	54,647
Rowan.....	23.3	11.4	15.8	19.9	13.1	2.1	12.7	47,093
Sampson.....	9.0	14.9	24.9	10.8	10.6	10.4	12.8	38,792
Wake.....	12.7	12.6	15.9	11.6	14.0	10.0	12.3	80,682
Wilson.....	34.2	21.4	19.0	18.3	12.8	15.0	17.1	40,774

Hanover, Richmond, Robeson, Sampson, Wake, Wayne, and Wilson. Representatives of the State Board of Health did the immunizations in all with the exception of Durham, Guilford, New Hanover, Robeson and Sampson, in these the campaigns being conducted by the resident health officer.

In 1914 the total number of deaths from typhoid fever was 839. This gave the State a death rate of 35.8 per 100,000 of population as compared with a rate of 15.4 for the registration area of the United States. The only states showing a higher death rate from typhoid fever at that time were Kentucky and South Carolina.

Convinced by the initial experience of 1915 that mass vaccination could be successfully obtained, the same program was continued in 1916, with a total of fifteen counties covered and 48,000 complete inoculations secured. Since then each year the same general program has been in effect, with some slight variations. Each summer the typhoid vaccination campaign has been a feature in those counties having organized health departments. In others, the campaigns have been conducted by representatives of the State Board of Health or by the local physicians co-operating with the Board. The number of counties has varied from year to

year, the record complete being as follows: 1915, 17; 1916, 15; 1917, 10; 1918, 14; 1919, 35; 1920, 32; 1921, 57; 1922, 53; 1923, 44; 1924, 48; 1925, 52. The frequency with which immunization campaigns have been conducted in individual counties is shown in the accompanying table. It will be noted that in twelve of the counties there have been no campaigns throughout the period, while in some others there has been one each year continuously since the beginning of the work. Altogether for the eleven year period the State Board of Health has records showing 807,978 complete vaccinations. This includes, of course, those persons who have followed the safe course and been re-vaccinated at intervals of three years. It does not include a large number of inoculations given by physicians in the routine course of their practice, the number of which it is not possible to accurately estimate.

Now all this was costly. It cost in time and energy and money. Did it justify itself in direct, tangible results? The answer is shown by the figures that follow.

In 1914 the total deaths from typhoid in the State numbered 839, giving a death rate of 35.8 per 100,000 of population. In 1924 the deaths from typhoid in the State numbered 270, giving a death rate of 9.9 per 100,000 of population. The reduction in the death rate was 72 per cent. Or to put it another way, if no efforts had been made to eradicate typhoid fever, and the same death rate had prevailed in 1924 as in 1914, 967 citizens would have succumbed to the disease. For the year, as compared with eleven years previously, there was a saving of 697 lives, and ten times the saving in serious illness. The accumulated saving of lives year by year for the eleven years would total the population of a small city.

It has been noted that twelve counties in the State have had no intensive anti-typhoid work. They are Ashe, Cherokee, Dare, Graham, Haywood, Jones, Macon, Madison, Pender, Polk, Transylvania and Tyrrell. These are nearly all located either in the mountains or on the coast, are small, and sparsely populated. The total population for the twelve is only 155,521. No one of them contains any considerable

groups of urban population. In such counties typhoid fever and other communicable diseases would be expected only as sporadic cases, the opportunities for spread being extremely restricted.

Against this group of twelve counties which have made no effort to eradicate typhoid fever may be compared a group of twelve others in which anti-typhoid efforts have been most continuous and intensive. These counties are Cabarrus, Cumberland, Durham, Guilford, New Hanover, Northampton, Pitt, Robeson, Rowan, Sampson, Wake and Wilson. Almost without exception these counties are large and thickly populated. They contain many large groups of urban population, and present excellent opportunities for the quick spread of typhoid fever and other communicable diseases. The total population of these twelve is 589,358.

Detailed statistics year by year for 1918-1924 inclusive are given for the two groups in an accompanying table. For convenience the first twelve, or those having had no anti-typhoid work, are called Group A, and the second twelve, or those having had the most intensive anti-typhoid work, Group B. The following is a comparative showing of the typhoid death rates in the two groups, the averages for the seven years.

	1918	1924	Reduction
Group A	13.8	9.9	28%
Group B	26.5	8.8	67%
State	22.2	9.9	55%

While the death rate dropped in the Group A counties from 13.8 to 9.9, a difference of 3.9, in the Group B counties it dropped from 26.5 to 8.8, a difference of 17.7. The comparison of the rates of reduction shows 39% greater reduction for the group of counties doing intensive work, and this in spite of their natural handicaps. From the showing made, it can be said that had the Group A counties made the same efficient efforts to eliminate typhoid as were made by Group B counties, then those counties now would be practically free from the disease.

Expressing it in terms of total deaths rather than rates, in 1918 Group A counties had 29 deaths from typhoid and in 1924 they had 22, a difference

of only seven. Group B counties in 1918 had 128 deaths from typhoid and in 1924 had 56, a difference of 72. Had the same intensive anti-typhoid measures been applied in Group A counties as were utilized by Group B counties, the results should have been certainly as successful, and probably more so because of natural advantages in these counties. The same degree of reduction in typhoid would have meant a saving of 20 lives in these counties for 1924 as compared with 1918, instead of seven, and the sickness and loss sustained by having had about 150 preventable cases of the disease. Considering the nominal cost of securing typhoid vaccinations, it would appear that these counties practiced a false economy.

Of course, other factors have contributed to the decline, in addition to the vaccinations that have been secured. Foremost among these other factors is the immensely improved sanitary conditions that have resulted from the enforcement of the sanitary privy law, enacted in 1919. The number of protected public water supplies, and sewerage systems, has been growing, and the total number of people so served more than doubled in the past ten years. Dependable milk control measures have been instituted by a number of communities. The general educational work of the Board has been amplified in character and has been constantly reaching an increasing number of people each year. But these additional factors affecting the typhoid death rate have been general, on a State-wide

basis, so that the effect has been fairly evenly distributed over all counties. It would appear conclusive, therefore, that the determining factor in the reduction of the typhoid death rate in those counties where it has been greatest has been the fact that a large portion of the population of those counties have been periodically vaccinated.

Let us consider for a moment what a skillful owner of horses does for a very fine colt, the progeny of extraordinary parents—one that is worth 100 times as much as the average horse. His first consideration is to provide for it the right kind of food; food which experience has shown will be ample for the support of optimal growth and for the maintenance of health after growth is completed. Beyond this he does little in any special way to look after its well-being other than to provide clean, wholesome surroundings and to give it an opportunity to take exercise as it desires. It is not put through a lot of contortions or made to lie on its back and kick its legs to get exercise of a suitable nature; it walks, trots or runs, it grows into a magnificent creature. It rests a great deal of the time.—E. V. McCOLLUM.

The most important of the laws of health relates to the character and quality of our food. Second in importance is the effectiveness with which we rest. I would put exercise third.—E. V. McCOLLUM.

CONDENSED AND EVAPORATED MILK

FRANK E. RICE, A.B., PH.D., Professor of Biological and Agricultural Chemistry, N. C. State College, Raleigh, N. C.

There is much confusion in most people's minds regarding the various kinds of canned milk found on the market. Really there are two, and only two, kinds of concentrated liquid milk put up in tin cans, although there are several manufacturers' brands. Both contain considerably less water than is found in ordinary fresh cow's milk; both are, therefore, condensed milks.

Both are made by evaporating part of the water from cow's milk; both are, consequently, evaporated milks. The main difference between them is that the one contains a large amount of added sugar, while the other does not.

Sweetened condensed milk, or what is commonly called *condensed milk*, is very thick or viscous, and is yellowish in color; it contains 40 to 45% ordi-

nary granulated sugar. Unsweetened condensed milk, which is ordinarily designated as *evaporated milk*, is about the consistency of light cream, and is darker in color than condensed milk; it contains no added substance.

Condensed milk is kept from spoiling by the sugar in it, just as fruit preserves and molasses remain good almost indefinitely. Evaporated milk, on the other hand, after being sealed into the can perfectly tight, is heated to a very high temperature to kill the bacteria. This process can be compared to the ordinary method of canning fruit. It is well known that when canned fruit is once opened and exposed to the air it will spoil unless kept on ice; the same is true of evaporated milk. But the sweetened variety after opening keeps just as well as before; there is no more necessity for keeping it cold than for keeping honey and molasses cold in order to prevent spoilage. Of course, if left undisturbed for weeks a little mold may grow on the surface, but the main body of the milk is unharmed and unchanged.

During the process of manufacture of both condensed and evaporated milk, the raw cow's milk is subjected to high temperatures. There has always been a diversity of opinion as to whether heated milk is as nutritious as that which has not been heated. The arguments seem to center around these questions: (1) Are the vitamins destroyed? (2) Is the milk rendered less digestible? (3) Are there not some peculiar living substances in milk which are beneficial to our health, but which are killed on exposure to heat? With regard to these points there should be found some difference between evaporated and condensed milk because the former is heated much longer and to a higher temperature than the latter.

Of the principal vitamins so far discovered, the scurvy-preventing vitamin is usually present in milk in relatively small amounts and it is most easily destroyed by heat. Evaporated milk can be expected to contain none of the anti-scurvy substance; while one or two investigators have found a little of this vitamin in sweetened condensed milk, it cannot be considered an important factor.

Although a great deal depends upon

the care taken by the manufacturer in preparing his product, both kinds of canned milk can be expected to contain practically as much of the other vitamins as raw milk.

With regard to digestibility,—a few investigators claim that raw milk is better, but the large majority vote in favor of milk that has been heated. Raw cow's milk forms a tough clot in the stomach, while heated milk becomes finely divided and on this account is more easily handled by that organ. The protein of heated milk has been found to be acted on more easily by the digestive enzymes. Besides this, in the process of manufacturing condensed and evaporated milk the fat is rendered very finely divided which makes it more digestible also. All this is more important in considering the feeding of infants and invalids than healthy adults. To the latter, raw milk is just as digestible as cooked milk. The important point just now is that there is nothing peculiar about the process of manufacturing canned milk that renders it any less easily handled by the digestive system than it was originally.

However, there is one point of warning in this connection.—Any white sediment which is found in the bottom of a can should be carefully stirred in with the rest of the milk. It has been found that the process of heating may render some of the important mineral salts insoluble and cause them to settle out. Merely mixing this material with the rest of the contents prevents any loss.

Many people have thought that there are some mysterious living substances in cow's milk beneficial to digestion and the health of man. They have thought that by heating the milk these things are destroyed and we are thus deprived of their good effect. But this has proved to be only supposition; cow's milk does not contain more than the slightest trace of any digestive enzyme, nor is there any specific substance that can be destroyed with heat, such as an immune body, which might assist the bodies of children or grown-ups to resist disease.

In answering the three questions above propounded, condensed and evaporated milks are found to compare

quite favorably with natural cow's milk in nutritive value.

The one big objection to the canned milks, of course, is the taste. A glass of milk made by mixing evaporated milk and water, half and half, may be just as nutritious as raw milk in most respects, but it doesn't suit the palate. The "cooked milk" taste may come out sometimes in puddings and soups. But it is not difficult to get into the habit of using milk products from tins. Immediately after the Spanish-American War the condensed milk business grew more than at any previous time. The soldiers had gotten used to it, and introduced it to their families when they got home.

There are a great many ways that condensed and evaporated milk can be used in food preparation wherein the taste does not usually prove objectionable: custards, puddings, sauces, cream soups, ice cream, cakes, for adding to coffee and cereals and for making cocoa. Many people like sweetened condensed milk on pancakes instead of sirup.

The next question is,—How does the cost of canned milk compare with bottled milk?

At the "Cash and Carry" stores in Raleigh one pound tins of unsweetened evaporated milk cost 11 cents and 12 cents depending on the brand; suppose we take 11½ cents as the average. By mixing this with an equal amount of water two pounds of milk of average composition is obtained. This is about 93% of a quart, which makes a quart cost us about 12½ cents. Therefore, if we are paying more than this for bottled milk we would be saving money by using evaporated canned milk as much as possible.

At the charge and delivery stores the same can costs 14 or 15 cents. By using an average of 14½ cents and calculating in the same way we find that it would cost about 15½ cents to make a quart.

Buying evaporated milk in the small six-ounce tins is considerably more expensive as would be expected.

Sweetened condensed milk comes mostly in 14-ounce tins; one well known brand is put up in 15-ounce tins and another in 11-ounce. The label may be expected to show the exact net contents

of the can since the laws are very strict in this regard. The 14-ounce size was found to cost 16 cents, the 15-ounce 20 cents, and the 11-ounce 14 cents at most of the stores.

An inspection of these figures shows that the 14-ounce size is by far the most economical. It is unnecessary and unwise to pay fancy prices for any particular brand of canned milk just because it is a little more widely advertised. The pure food laws and sanitary regulations nowadays are so strict that one can depend upon it that one manufacturer's brand will be as good as another.

Sweetened condensed milk contains 28% milk solids; ordinary cow's milk about 12.75%. With these figures it can be calculated that to make a quart (2.15 pounds) of milk it will require 1½ 14-ounce cans, or 18 cents worth. However, since the product contains about 43% sugar, worth 6½ cents a pound, there is present 2¾ cents worth of sugar. This deducted from 18 cents leaves 15¼ cents as the cost of making the quart.

To sum up then,—unsweetened evaporated milk at 11 or 12 cents per pound can is equivalent to natural cow's milk at 12½ cents a quart. The value of the milk in a 14-ounce can of sweetened condensed milk is equal to natural milk at 15¼ cents per quart. Most bottled milk costs well above these figures in Raleigh, and this is perhaps true of the whole State of North Carolina. It is evident, therefore, that it is economical to use these canned milks in the place of bottled milk in most cases.

As far as cash value is concerned these are the facts. But there are some distinct advantages of canned milk over bottled whole milk:—It can be depended on to be free from dangerous bacteria. No matter if the cows have tuberculosis or the milkers have scarlet fever, the germs of these diseases cannot survive the manufacturing process; so the finished product will be free from them. There is likely to be less waste in the use of canned milk; that which is not used today can be used tomorrow. Ice is not necessary before the tin is opened, nor for the sweetened variety after opening; but unsweetened evaporated milk should not

be kept more than a day after opening unless ice is used.

Of course, the big advantage that has always been recognized is the portability of milk in tins. For camping trips and for children on trains it is readily carried and most useful. It was once true that only on such special occasions was it practicable to use milk in tins. Now, with the price of tinned milk low and bottled milk high, it is economical to use these products every day in the household, especially unsweetened evaporated milk.

Inasmuch as the nutritive value of the canned milks is equal to fresh milk in most respects, we may well urge its use in those districts where fresh milk cannot be obtained. It should be possible to prevent pellagra by rounding out the diet with canned milk as well as with fresh milk. Of course, for this as well as for all other maladies due to improper nutrition fresh milk is best, but if it is not available, by all means, let canned milk form a part of the diet. It is good, and the price is reasonable.

THE ADVANCING KNOWLEDGE OF CANCER

BY GEORGE A. SOPER, PH.D., Managing Director The American Society for the Control of Cancer

Some months ago the humorous remark of a prominent physician to the effect that nobody knew anything about cancer, taken literally by a reporter and published in every newspaper in the country, led the public to obtain an utterly wrong idea of the state of knowledge of this disease.

The doctor's remark produced a hearty laugh among the many physicians who heard it, for there was not one who was not aware that the speaker's knowledge of the subject was extensive and detailed, nor failed to sympathize with him in his exasperation at the fact that the discovery of a specific cure for cancer continued to elude investigation.

It is as absurd to say that nobody knows anything about life itself as to say that nothing is known about cancer. A great many things are known about life and about cancer, but of course a great many things have escaped patient study in each case. How much we think we know about anything depends a good deal upon our point of view. As the Chinese say, our knowledge is like a fan which, held close before our eyes, appears to comprise the universe, but to the eyes of others usually forms but a very small part of it.

The Existing Knowledge of Cancer

The information which exists today in regard to cancer is not only more

extensive but of more practical value than many persons suppose. It is sufficient, if put into effect, to reduce the present death toll by one-half among women and one-third among men. At least this is the opinion of Dr. Charles P. Childe, President in 1923 of the British Medical Association, a distinguished student of the cancer problem.

If we apply this estimate to the number of deaths from cancer which occur among men and women in the United States, we shall find that over 40,000 people perish needlessly from this disease each year in this country. In other words, according to Dr. Childe's opinion, the lives of over 40,000 men and women, most of them fathers and mothers, many of them in the prime of life and at the period of their greatest usefulness, are annually sacrificed to the failure to turn the knowledge which exists concerning the prevention and cure of cancer to account.

In many quarters fundamental facts are being collected which are adding to the sum total of information which scientists and practicing physicians possess as to the cause and cure of the disease, and progress is being made in another direction: the facts already in existence are becoming better understood.

What is referred to here as the knowledge of cancer is the composite knowledge of those who are recognized

by the medical profession as qualified students of that disease. As Dr. Joseph Colt Bloodgood has said in a recent letter to the *New York Times*, the information on the cancer question which is of real value is not the opinion of one person however eminent or intelligent he may be, but the consensus of opinion of the world's authorities based on the recorded experience of clinical work and experimental research.

The reviewer of a book, in which the claim was advanced that a specific had been found that is a preventive and a cure for cancer, said, "Cancer is such a serious matter for the world at large that the premature claim of having arrived at a solution of this problem and the unwarranted hope held out to cancer sufferers by such an optimistic statement is a matter for grave consideration."

Persons who would like to examine for themselves into the amount and character of the existing knowledge of cancer cannot do better than to begin with the work of Dr. Jacob Wolff, follow this up with the latest edition of "Neoplastic Diseases" by Dr. James Ewing, Professor of Pathology at the Cornell Medical School, and the references to be found in the Index Medicus, and so to the article in the latest Annual of the Encyclopedia Americana by Dr. Francis Carter Wood, Director of the Institute of Cancer Research of Columbia University. Dr. Wolff's work, called "Die Lehre von der Krebskrankheit," is in three volumes and contains 2,626 pages; Dr. Ewing's book is 1,054 pages in length.

How the Knowledge is Increasing

It has been said that more progress has been made toward an understanding of cancer during the past fifty years than during the preceding five hundred years, from which it is fair to infer that the advance which has been accomplished within the last fifty years has been revolutionary.

The progress has been in more directions than can be stated within the limits of this article. In the direction of causation may be mentioned the discovery that chronic irritation is almost invariably one of the leading factors in the production of cancer. As to cure, the use of X-rays and radium has

furnished methods of treatment of incalculable service. Surgical procedures have been developed to a point which is believed to leave little more to be accomplished in this direction. With reference to prevention, the whole idea of preventing cancer by means of hygienic procedures and minor surgical and radiological treatments is not only new but of so much value as to lead many to think that cancer is more often preventable than curable.

One of the results of the new knowledge is that cancer can now be more accurately diagnosed than formerly and inestimable advantages are following in consequence. One of these advantages lies in the fact that there is today little reason for physicians to postpone a decision in those early cases which come to them until a cure is no longer possible.

Diagnoses are still difficult and not infrequently impossible in many early cases, but in some of the most usual and most curable forms and locations in which cancer occurs they can generally be made with certainty while there is still time for the patient to be cured. Cancer of the skin, for example, can and should be diagnosed and cured in practically every case, providing the patient does his or her part. And so with cancer of the lip, cancer of the breast and cancer of the uterus. Cancer of the buccal cavity is more readily diagnosed than cured, although there are many persons alive today who can testify that cancer in this location is not hopeless, by any means. In fact, cancer has been successfully treated in practically every location.

Value of Radium, X-rays and Surgery

As time passes, a better understanding is being reached as to the relative efficacy of radium, X-rays and surgery and the several fields of usefulness of these methods of treatment are being more and more clearly defined.

The details of skillful operations are being recorded with increasing accuracy and completeness, and the records are being tabulated in larger numbers and studied with increasing care. Mindful of the fact that cancer may recur after long intervals of time, the health of persons who have been treated is being watched for many years to see

how permanent their cures have been. It has been possible to collect statistics covering hundreds of cases and compare the effects produced by radium and X-rays with those obtained by surgery in the treatment of cancer in the various parts of the body where it occurs. Thus for example there was published in 1924 the report of a committee headed by Dr. Robert B. Greenough, which had been appointed by the American College of Surgeons, in which nearly one thousand cases of cancer of the cervix of the uterus were brought together with the object of determining the relative value of surgery, X-rays and radium for the cure of cancer in this particular location. In England, the Ministry of Health has published an analysis of 20,000 cases of cancer of the breast, the object being to determine by the record the efficacy of the various methods of treatment employed.

So far as irradiation is concerned, the net result of all the information thus far collected is to show that, like surgery, radium and X-rays have a distinct place in the treatment of cancer, not only for the cure of that disease but for the amelioration of the suffering in incurable cases. Not infrequently surgical operations are advantageously preceded and succeeded, one or both, by this treatment.

Institutions Devoted to Cancer Research

The scientific knowledge which lies at the basis of a true conception of the causation, prevention and cure of cancer is being added to through such research institutions as the Institute of Cancer Research of Columbia University, the State Institute for the Study of Malignant Disease at Buffalo, the Cancer Commission of Harvard University, the Imperial Cancer Research Fund of England, and hospital and research organizations such as the Collis P. Huntington Memorial Hospital, Boston; the Memorial Hospital, the New York Skin and Cancer Hospital, and the New York City Cancer Institute, in New York City; the Barnard Free Skin and Cancer Hospital, St. Louis; the Albert Steiner Ward for Cancer and Allied Diseases, Atlanta; the George Chase Christian Hospital and Clinic, University of Minnesota, Minneapolis; The

American Oncologic Hospital, Philadelphia; The Pennsylvania Cancer Commission; The Middlesex Hospital in England, and others.

The total number of persons who are working constantly for the discovery of new facts which may be usefully employed in the control of cancer is large. Many of them are surgeons, others radiologists, and not a few are out-and-out research workers giving their whole time to this work. Unlike quacks who work secretly and do not take anyone into their confidence, these students of cancer are constantly discussing their results with one another and publishing their findings where all workers in this field can see and profit by them.

Since 1907 there has been a well-established organization of scientists who are engaged in studying cancer, called The American Association for Cancer Research. The President is Dr. Channing C. Simmons, Surgeon of the Cancer Commission of Harvard University, and the Secretary is Dr. William H. Woglom, of the Institute of Cancer Research, Columbia University, New York. This Association has a membership of 148. The papers which are presented at the annual meeting are eagerly awaited by students of the cancer problem in Europe and America. They are published in the *Journal of Cancer Research*.

What Everyone Should Know

Twelve years ago, our Society was established to carry on a campaign of education as a means of turning the existing knowledge of cancer to the fullest account. The founders knew that it would not be necessary to wait until a complete cure for cancer had been discovered before systematic help could be given to the 250,000 or more sufferers from this disease who existed in the United States and Canada.

The hopes of the organizers have been fully justified. During the dozen years of its existence, the American Society for the Control of Cancer, has given instruction by means of lectures, newspaper articles, radio talks and other vehicles of publicity in all parts of the United States and in many of the Provinces of Canada, and it is estimated that not less than 50,000,000 people have thus obtained their first

lesson in regard to this disease. It will, of course, be necessary to follow this up with further instruction. The public has received some knowledge of the early symptoms of cancer and has been told to go immediately to a competent physician upon the first appearance of the disease. About 25,000 volunteer workers are engaged in this educational work in the course of the year. The Society maintains national headquarters at 370 Seventh Avenue, New York City, where it is glad to answer inquiries on any and all aspects of the cancer problem.

How Cancers Start

The new knowledge teaches that cancers always start in a small way. At first they are miniature cancers. They grow slowly and insidiously. Consequently, the person who is attacked by one may not become aware that anything is seriously the matter for a long time. A cancer of the skin, for example, may continue for several years without causing pain or other marked inconvenience.

Not only is a cancer small to begin with, but it appears to be a distinctly local disorder. Present day knowledge gives no reason to suppose that it is a constitutional or blood disease. On the contrary, the weight of evidence is opposed to that supposition. No general disease is in any respect like it. No disease necessarily precedes it or is related to it. It often attacks persons who appear to be in perfect health.

In its early stages the cancer does not affect the general health nor the patient's spirits, and this is particularly true if the patient does not know nor suspect that he has cancer. It is only after the cancer has progressed considerably that the general health is impaired.

If, while the cancer is small, it is completely removed by surgery or destroyed with X-rays or radium, or, in fact, by any other means, that is an end of it. This could not be so if cancer were a disease which affected the whole body.

If, instead of being completely removed or destroyed, the original cancer, or any particle of it, is permitted to live, additional cancers are apt to fol-

low either at the original site or elsewhere. Thanks to the increasing knowledge, the manner in which this happens has become more and more apparent. It has been proved that minute particles of the original cancer may be carried to various parts of the body by the lymph and blood and there establish themselves as new cancers. The routes by which these cancer cells are carried are often known and in skillfully conducted operations, the places where the particles may have lodged are attended to when the cancer itself is removed.

This information is of much value. A good many deductions of practical utility have been based on it. One is that surgery or radiation must be applied before any migration of the little particles has taken place, for after this has occurred the removal of the original cancer alone will not produce a permanent cure. In early treatment lies the hope of cure.

Gradually a more and more definite meaning is being attached to the word "cure" as applied to cancer. Physicians are less willing today to say that a patient has been cured of cancer than they were formerly. Recurrences from the growth of particles which have remained dormant for a very long time may occur. After five years, however, the chance of recurrence is relatively small. Consequently, physicians are coming to measure the success of the various methods of treatment which they employ in terms of the number of five-year cures which have been effected.

Not Contagious or Inheritable

With the increasing knowledge, opinion is becoming more and more securely settled that cancer is not due to a parasite. It would be a great step forward if the public would learn to accept this opinion, for the possession of it would dispel not a little of the fear with which cancer is regarded. It would also help to put an end to the promotion of some "cures" which do not cure, in other words, quackery, that greatest of all cruelties, as so many writers have declared.

If cancer is not due to a parasite, it follows that the disease is not transmissible from person to person. This

is true of all diseases. It also follows that a serum cannot be prepared which will stop it.

It should be generally recognized that cancer is not communicable, for a belief that it is infectious has not infrequently led to the shameful neglect of patients who have had need of the best care and attention which could be given to the sick. Persons need have no fear to live or work near one who has cancer.

As to the inheritability of cancer, the general opinion among qualified students of this question is that the disease itself is not inherited, but that a certain lack of resistance toward it may now and then exist in a family for two or three generations. Experiments which have been made in breeding large numbers of mice have led some persons to get the wrong idea that cancer or a predisposition toward it might exist in some families indefinitely. It is true that by carefully selecting mates through hundreds of generations, strains or families of mice have been produced which are more susceptible to certain forms of transplanted cancer than is commonly the case, but nothing like such a predisposition occurs among mice which are left to mate as they will. The great difficulty with which susceptibles can be produced shows that the results are highly artificial. Apparently they have no analogy among human beings under the ordinary circumstances of everyday life. For practical purposes, it is reasonable to consider that cancer is not transmissible from parent to offspring among human beings.

The Prevention of Cancer

Within the last few years it has been found that the inciting cause of cancer is in practically all instances some form of chronic irritation. At the site of the growth there has been for a considerable time a mechanical, chemical, bacterial, or other irritating condition which has in some way so disturbed the natural resisting and repairing function of the tissues that they have at last given way and set out upon a career of unrestrained and unrestrainable growth. This theory has now been so thoroughly investigated as to be accepted universally as a funda-

mental and completely established fact. To prevent cancer therefore is to prevent the chronic irritations which lead to it. One should beware of the broken tooth or dental plate which continually irritates the tongue, cheek or gums; of the spectacles which make the head sore behind the ear, on the temples or nose; of any sore which will not heal; of the mole or wart that changes in color, size or appearance; of indigestion which will not stop and cannot be explained; or any unusual and unnatural discharge from any part of the body and of any lump which does not go away.

When any of these conditions occur, you should go at once to a capable doctor and do what he advises. At once means today. If the trouble is not cancer, your discomfort will thus be removed. If it is cancer, your promptness may save your life. In dealing with this disease, delay is not merely dangerous: it is fatal.

When Johnny comes for his teeth to be examined and we find his teeth are poor and dirty, we teach him to brush his teeth but we should also find out why he has poor teeth. It is either one of two things—either Johnny is poorly nourished or Johnny's mother has been poorly nourished before or after Johnny was born, when she was unable to give him tooth-building food.

It is highly important to realize that we have emotional habits as well as habits of mind and body. We are coming to realize the importance of the psychology of the emotions in relation to mental and bodily health. We can definitely set for ourselves the goal of forming habits of happiness, of enjoyment and enthusiasm in our daily life, of courage and of generosity toward the opinions of others. Until we realize that negative emotional habits have just as much to do with ill health as germs, we have fallen far short of our standard.—PATTY I. HILL.

Man's happiness consists in the means and not in the end; in acquisition and not in possession.

PUBLIC HEALTH NURSING*

BY J. G. TOWNSEND, Surgeon, United States Public Health Service

Public-health nursing, as a specialized branch of general nursing, has been a natural development of the early work of ministration carried on by the bishops, priests, and deacons of the early church. In reviewing the history of the early church and its work of visitation among the poor, we find what might be called "visiting nursing work," in the third century, as a part of the church duty, with the following instructions:

He is to minister to the infirm, to strangers and widows, to be a father to orphans, to go about into the houses of the poor to see if there is anyone in need, sickness, or any other adversity; he is to care for and give information to strangers; he is to wash the paralytic and infirm that they may have refreshment in their pains . . . He is also to visit inns and see if any poor or sick have entered or *any dead are in them.*

For some reason or other, however, this work was abandoned by the church, and from 600 to 1600 A.D. there was no organized care of the sick in their homes.

Prior to the time of Vincent de Paul (1580-1660), visitations to the sick, and their relief, were on a basis of pure charity, rich and prosperous individuals contributing to the wants and needs of the so-called poor, there being no methods of determination as to what really constituted poverty. Vincent de Paul was the first to introduce the aspect of social service in home visits. He saw that charity had been carried too far in that pauperizing was somewhat encouraged. He believed that promiscuous giving was harmful, and rightfully insisted that the condition of the poor should be investigated to learn the cause of their poverty,

whether or not it was possible to get them employment, and, briefly, to put them in such a condition that they could help themselves. He did not believe in sending the individual member to the various asylums or hospitals, but thought instead that the family unit should be kept intact, even if it was necessary at times to pay the rent or lend home furnishings.

This was indeed a modern step for those times and is practically what social service in connection with public health nursing does at the present time.

In the meantime, the standards of the nursing profession, through the wonderful efforts of Florence Nightingale, were being raised to a point never before thought of. Miss Nightingale's work in the Crimea fortunately brought to her attention the dire need for trained nurses, with the proper interpretation of what the word "trained" means. As a result, in 1860 the first school for nurses was opened with an enrollment of 15 students. They were to have one year's training in the wards of the hospital, after which they were expected to remain for one or two years as full-fledged nurses. It was these 15 nurses, disciples of Miss Nightingale, who, in their turn, acted as teachers and from whose efforts the nursing profession as we know it today had its real beginning.

With the nursing personnel as it was in those times, it was possible to extend better scientific care, in the matter of district and home nursing, to the poor. William Rathbone of Liverpool, England, has been credited with being the first to inaugurate district nursing. At an early age he was always interested in the problems of the poor; and in a practical way he learned their needs, by making personal visits through the courts and alleys, calling from house to house, learning something of their habits and difficulties and, with it all, seeing their great need for medical attention, visioning, I suppose, in his own mind how much could

*Read at the annual convention of the State nurses and health officers of West Virginia, Clarksburg, W. Va., Sept. 25, 1925. Published in Public Health Reports, Vol. VL, No. XLV, Nov. 6, 1925.

be accomplished with systematic visitations by a trained personnel to advise them regarding general and personal hygiene.

In order to try out his theories in a practical way and to see whether the suffering and misery of the sick could not be alleviated by proper nursing and home conditions improved by instructions in hygiene, he employed a nurse who had been attending his wife, and at his own expense, obtained her cooperation in making these visits.

The reports of these visits are most interesting. We learn that the nurse was instructed not only to give nursing care to the sick, but to teach the families how to take care of themselves and of their own sick and how to lead the proper kind of lives. So here again we find social service work inevitably bound up with visiting nursing, the public-health nurse becoming the social service worker as well.

The results of this feeble beginning were so satisfactory that, in 1859, with the aid of Miss Nightingale, other nurses were put on duty and of course the work grew.

In reviewing an account of this work, we have found a tendency and a right one, to get away as far as possible from actual medication and to emphasize to the limit public-health hygiene and prophylaxis, even though the knowledge of the prevention of infectious diseases in that day and time was meager. We read that, in those times, nurses were "urged over and over again" not to pauperize the patient by giving medical comforts unless they were actually necessary. Florence Nightingale also saw this danger and said: "If district nurses begin by giving relief they will end by doing nothing but giving relief."

In modern public-health nursing of today we are, in the same way, cautioning the public health nurse not to fall into the error of practicing, to a great extent at least, bedside treatment—to remember that her duty is to preach prevention and to leave the treatment end of the disease to the practical nurse or practitioner.

Public-health nursing in this country was rather slow in developing. In 1828 Doctor Warrington, of Philadelphia, only 23 years of age, inaugurated the so-

society of district nursing. At first it was merely for the purpose of qualified nursing attendance to poor women in childbirth, but the work was gradually extended to take care of all classes of cases. The first charter of this organization read: (to) "Provide, sustain, and cause to be instructed, as far as possible, pious and prudent women as nurses, it being understood that the association does not confine itself to the supply of monthly nurses only, but for every variety of sickness of patients."

A district nursing organization was started in Boston in 1886, and in 1888 the association was incorporated under the name "Instructive District Nursing Association," with the purpose not only of caring for the sick but for giving them instruction in home nursing and public health. The objects of the association were stated to be—

1. To provide and support thoroughly trained nurses who, acting under the immediate direction of the out-patient physicians of the Boston Dispensary, shall care for the sick poor in their own homes instead of in hospitals.

2. By precept and example to give such instruction to the families which they are called upon to visit as shall enable them henceforth to take better care of themselves and their neighbors by observing the rules of wholesome living and by practicing the simple arts of domestic nursing.

So, again, we see that the idea of public-health instruction as a fundamental and most important duty of public health nursing was all prominent. This phase was being gradually accepted by all as the most sensible way of carrying on public health nursing, the nurse thinking more of the community as a patient than of the individual sick.

In 1893 Isabel Hampton, in an address to the International Congress of Nurses, said:

In district nursing we are confronted with conditions which require the highest order of work, but the actual nursing of the patient is the least part of what her work and influence should be among the class which the nurse

will meet with. To this branch of nursing no more appropriate name can be given than "Instructive nursing," for educational, in the best sense of the word, it should be.

The first special work in district nursing was undertaken in London in 1892, when a staff of visiting nurses was organized to visit the schools and inspect school children. However, the honor of inaugurating school nursing in America is due to Miss Wald, founder of the Henry Street Settlement, who in 1902 suggested the use of nurses to supplement the work of doctors in the schools of New York. Medical inspection of school children had been in vogue in the schools before that time, but it was merely a perfunctory examination by a physician, the only thing accomplished being the exclusion of the child, nothing being done to prevent the cause of the illness, or a visitation at the homes of the school children to carry the principle and gospel of prevention of disabling illnesses.

During these times of demonstrations in public health nursing and the arousing of public interest in these demonstrations, gradual progress was being made in the requirements of those who wished to enter the nursing and medical professions. While nursing was reaching the plane which it has now attained as a profession, wonderful strides were being made in the medical profession toward the prevention of diseases, such as the use of antitoxin against diphtheria, inoculation to prevent typhoid fever, and the valuable work now being carried on toward the standardization of antitoxin against scarlet fever. The dangers of neglected teeth, the tonsil and adenoid evil, and the value of scientific baby care began to be considered by the laity along with their previous ideas of safeguarding the health of cattle and hogs.

Dental prophylaxis, the outline of programs for prenatal hygiene, and the development of intensive school programs are all accomplishments which demand highly trained nurses in the public-health field for service in all recognized full-time health departments.

In the early history of public-health nursing we find that it had its inception in centers of population—the

cities. Those who lived in the country and in rural districts were indeed deemed fortunate. Living in the country (and the same idea has held to the present day) was thought to be a protection against sickness. For this reason public health of rural communities has been, and still is, greatly neglected. Thirteen years ago there was not one full-time county health department in the United States among the three thousand and odd counties composing this country.

We finally awoke to the fact that a real health problem existed in the country, and one of even greater importance than the urban health question. The death rate was higher, the morbidity index was higher, and the rural dweller did not have a protected water supply, a protected milk supply, or proper methods of sewage disposal, as provided by ordinances in cities. Therefore, he drifted along by himself, contracting typhoid fever from his own water supply, polluted by his own sewage, and blaming the causation of the disease on God, the devil, tin cans, weeds, or whatever came to his mind.

It took us a long time to realize these things, but since that realization full-time county health units have been organized and are in operation in over 280 counties in the country, with new ones developing every year through the financial coöperation of the United States Public Health Service, the International Health Board, and the State boards of health.

I know of no greater service in public-health nursing than is given by nurses working in full-time county health units. Nor do I know of any better way in which a nurse can produce real service in virgin fields than in this branch of nursing work, which in itself is a *specialized* branch of the profession.

Just because an individual has M.D. after his name is no index at all that he will make a health officer; just because an individual has R.N. after her name is no index that she will make a good public-health nurse. In both instances it is absolutely essential that certain periods of training and practical experience be undertaken before the proper qualifications can be attained in this special field. The great difficulty

experienced in the development of full-time county health departments is to find properly qualified public-health officers and properly qualified public-health nurses.

The part which the public-health nurse of today plays in the general scheme of full-time health service—municipal or rural—is elaborated very much in detail in a report of the "Committee to Study Visiting Nursing," instigated by the National Organization for Public Health Nursing, with the assistance of the Metropolitan Life Insurance Co.

This committee, in an effort to evaluate the present status of visiting nurse associations and learn their cost, made a study of public-health nursing in 14 communities in various localities of the United States, including rural nursing as well as work in large and small cities. The various types of nursing work carried out in the various cities were as follows:

Maternity nursing:

- Prenatal.
- Delivery.
- Postpartum.

Infant welfare.

Child welfare (preschool):

- Orthopedic.
- Nutrition.

School nursing.

General medical and surgical nursing.

Acute communicable disease nursing:

- Tuberculosis nursing.
- Venereal disease nursing.
- Health education.
- Industrial nursing.
- Nursing of chronics.
- Mental hygiene.

In the summary of conclusions and recommendations in this exhaustive report it is recommended that—

1. Every agency should have an established routine for introducing new nurses into the work of the agency.
2. In addition to the initial period, there should be a more or less continuous staff educational program.
3. Adequate supervision is essential to the efficient administration of every public health nursing agency.

Of course there are other recommendations regarding the cost of nursing

and routine methods of operation, but I mention the above to emphasize that, in present-day programs, there is a continual cry for well-trained personnel, in realization of the fact that public-health nursing is indeed a separate and distinct specialty of your profession.

Last year the United States Public Health Service, through Miss Lucy Minningerode, superintendent of nurses, sent a questionnaire to all State departments of health, in order to obtain information as to the status of public-health nursing as it is carried on by the several States.

It was learned that 17 States and the Philippine Islands have separate divisions or bureaus of public-health nursing; 8 States have bureaus of public-health nursing and child hygiene combined; 10 States have only bureaus of child hygiene; and 11 States and Alaska have no bureau of nursing of any description. A few States were not heard from.

The duties performed by the nurses in these State health departments included the following:

1. Child health conferences and demonstrations.
2. Organization of volunteer services.
3. Classes for midwives and mothers, with prenatal instructions.
4. School nursing, physical examination of school children, inspections.
5. Health educational work and health talks.
6. Follow up of clinic and school cases.
7. Maternal and infant hygiene under the Sheppard-Towner Act.

It might not be amiss to give verbatim a few quotations from some of the State health officers regarding their ideas of public-health nursing as an aid in the State health program. One health officer said:

"Public-health nursing is an indispensable aid, since the success of the entire program depends upon education of the public, and the public-health nurse is the best teaching agent we have yet found for dealing with individuals and families in the home."

Another said:

"Next to an efficient director, an efficient public-health nurse is the

most important part of any public-health unit."

Still another:

"It would take a manuscript to answer such a question as this."

And another:

"Much of the program of the State board of health is made possible through the coöperation of local public health nursing services."

With the need for public-health nurses, which we all can appreciate today, it is hoped that the time is not far distant when theoretical and practical teaching in the public-health field will be a part of the nurse's training. At least the problem can be given to the probationer; and if she feels the call of the public-health field, provision should be made to have her located with successfully functioning units, in order to get practical training to supplement her lectures.

A start has been made in courses in public-health nursing which are in vogue at certain universities in the country; but the number offering these facilities is certainly all too few to supply the demand now existing for this type of health endeavor.

In the work of a State board of health, the fundamental problem is the rural one. For that reason much concentration and labor are being expended in the development of new full-time county health projects and the standardization of those now in operation. No rural health unit is complete without a nurse or nurses on the staff. The duties of these nurses are familiar to all of you—visits to schools, assisting in the inoculation and vaccination of school children, visits to contagious-disease cases, assistance in the keeping of records, giving health talks, and the like. With these duties it is all-imperative that the rural health nurse develop an attitude of social service.

Social service has been a much misused term because its practical application has not been conducive to the best results, at least in some places. Certainly social service has a place in the public-health nursing program. But all too often we are prone to think of social service in terms of social uplift.

The average person visited resents any attitude on the part of the visiting agency implying that he needs to be uplifted socially, and we can hardly blame him. Social service should carry with it a neighborly and friendly advice which will help the family out of their difficulties. For example, a visiting nurse finds a case of tuberculosis in a family. The wage earner in the family goes to work every day in the factory and is in such a condition that tuberculosis might easily develop. It is not enough merely to say that the individual should seek another line of work where he would not be subjected to the stifling atmosphere of the factory. Real social service goes a step farther and tries to find for that man a position which would be best applicable to his case.

It is not meant that real social-service work should be the crowning duty of the public-health nurse, but a part of her duty which is so interwoven and so cemented with her work that she cannot escape it. This is especially so in the communities in which we are laboring.

In our enthusiasm for better rural health work, there is always the danger of overdeveloping specialized health service. I have been in counties where I have found a nurse attached to the county health unit doing routine work; a nurse on duty with the tuberculosis association, looking up tuberculosis cases for specific diagnosis; a nurse placed on duty especially by the public schools of the county for the purpose of school inspection; a nurse representing the Red Cross; and, in some places the Metropolitan Life Insurance Co. is doing most valuable work in the public-health units among the policyholders of its company.

The result of this specialized, officially uncorrelated service is confusing and overlapping; and, in my own mind, there is a question as to whether the maximum results can be obtained by such service. Only recently I was talking to the health officer of a large city where various agencies were carrying on public-health work in this way. I was told by him that, in one day, a home which occupied a rather strategic position just outside of the city was visited by five different nurses. I can

imagine the feeling of the householder when the fifth nurse arrived. One visit should have been enough to obtain all of the information that all of these different agencies wished to learn.

It is not desired that the individuality of these different organizations be taken away, but it is essential at least that they report their findings to the county health board or the county health officer as the case may be. If the health officer wishes a case of tuberculosis investigated, there does not seem to be any valid reason why he should not call upon the tuberculosis nurse or the Red Cross nurse to assist in the work, and no valid reason why the nurse placed on duty by the school board should not assist in the school examinations.

If this correlation existed, we would find, in many counties, smoothly working machines with an adequate nursing force to take care of all their needs.

LOOK TO WHOLESOME HOME ENVIRONMENT

Many a home environment which to the superficial student might possess the appearance of being wholesome is detrimental, declares Dr. Joseph H. Marcus, who writes about the disobedient child in the December *Hygeia*.

Parental solicitude for the child's welfare may be carried to such extremes as to undermine the physical state and lay the foundation of apprehension, dread, sluggishness and torpor. Because of this subtle interaction between the child's individual constitution and the ideas and ideals generated in his home atmosphere, the familial factor must at all times be cautiously viewed when interpreting the manifestations of the child.

Impressions register on the infantile brain, even though in an immature manner, and of sufficient depth to create a more or less lasting impression.

The spoiled baby will cry for a definite purpose; he may wish to be picked up. When he is lifted from the crib, his cries cease with the first sensation of motion. When the 2 a. m. feeding is eliminated, the infant manifests his desire for the accustomed feeding by arousing the household. If a bottle of water or an attitude of healthy inattention is substituted, the baby is im-

As a matter of fact, in one of our Western States last year the county tuberculosis association actually amalgamated with the county health unit in the support of its program and for the better attainment of the purposes of both the county health unit and the county tuberculosis association.

As yet public-health nursing is in its infancy. The future holds unlimited service for this branch of your profession. The difficulty is to find the workers; and it is our duty as public-health workers to present this problem before the nursing profession with a plea for the "trained" worker. This plea has been continuous from the days of the early church; it is urgent now and will be ever sounding in the future.

(NOTE: An abstract of "Evolution of Public-Health Nursing," by Annie M. Brainard, furnished some of the historical data used in this article.)

HOME ENVIRONMENT

pressed with the fact that his whims will not be responded to; soon he will accept this change of routine as a matter of course and go to sleep.

Good Habits Formed in Cradle

In the cradle lies the foundation of regularity in habits, and responsiveness to sound habits. The human infant, in spite of the potentiality which he carries with him to develop into the reasoning adult, is by far the most helpless and dependable of infants; he is subject not only to his own laws of development, but to experimentation with certain doctrines on the part of untrained parents.

Parents Are Untrained

Parents have access to a mass of trashy literature on the subject of bringing up children; this literature usually ignores the fact that no two children are quite alike in all respects and that no method of child rearing has been devised which would meet the requirements of all cases.

It may be difficult to train a child to take nourishment, to attend his physical functions at certain convenient intervals, to go to sleep naturally with-

out the necessity of lulling influences such as swinging the bed or rocking the cradle. These babies from earliest infancy may manifest a certain amount of stubbornness which becomes more firmly rooted with the passing of time, so that with the advent of childhood the negative phase is implanted with great depth, owing to the extreme flexibility in the parental attitude. These wilful, but otherwise normal, children dominate their parents with powerful traits inherent only to them and obvious before the period of connected articulation. These children are even more commanding when their helplessness is accompanied by a few meaningless tears. They are obstinate, but their wilfulness should be opposed by increased stubbornness in the parent.

Parents Need Instruction

The situation created by these negative children necessitates instruction of

the parents, in order that they may appreciate the point of psychology involved and help in eradicating the maladjustment.

In order to combat the negative attitude, parents should relegate themselves more to the background, allowing the children free play. If punishment is necessary, the storm must be weathered by all means. The child should be lauded for his good qualities and should be told about those qualities which parents wish him to achieve.

The child cannot too early be taught to face reality and learn to appreciate the fact that life is a process of adjustment.

Training the infant in regular habits is essential to a happy adaptability in childhood and adolescence; displaying an attitude of stubbornness more forcible and lasting than the child will eliminate many negative traits; healthy inattention is an excellent form of medication.

CHILDREN SPOILED BY TOO MUCH LOVE

The most essential thing to the child's mental well-being is a happy relationship between the parents, says Dr. Smiley Blanton, who tells about the Minneapolis Child Guidance Clinic in the December *Hygeia*.

Parents who are glossing over, for the sake of the child, a real antagonism for each other are rarely capable of the evenness of discipline and cooperation necessary to the child's development.

But unkindness or lack of love for the child are often not a bit more destructive than too much love and solicitude.

Sometimes parents are more demonstrative toward one child than they are toward another. Even though they may not love one child more than the others, they often pet and brag about him more.

A girl, 5 years old—a very moody child—became seclusive and unhappy and no longer cared to play with children, but sat brooding, and even weeping. Careful study of the home situation showed that this girl felt herself neglected by her parents because her younger sister, who is superficially

brighter and more vivacious, received all the attention from the teachers, neighbors and relatives.

If such a condition had been allowed to go on the older child might have grown up with a marked feeling of jealousy toward her younger sister; moody, unhappy, and perhaps bitter toward every one.

Nagging Brings Negativism

Another interesting case was that of a little girl who was absolutely negative to all commands. It was difficult to understand the extreme negativism of this child until we obtained a whole record of the family situation.

The mother was an anxious person and nagged the children constantly. As a result of this, the child not only refused to obey any commands, but always did the opposite of what her mother told her to do.

This attitude on the part of the child was a perfectly normal one under the circumstances. It was the only way she had of defending her personality against the constant nagging and flood of unwise commands.

THE IMPORTANCE OF BEING A PARENT

BY D. A. THOM, M.D.

To the child the parent should be companion, friend, and confidant. The parent whose little child brings all his troubles and doubts to him for solution has established a relationship of tremendous value. This can never be brought about if the parent's attitude is cold and repelling. A mother who is too busy to bother with a little child's nonsenses will never be bothered by his real problems.

A child should be treated with as much courtesy as an adult. Children have affairs and plans of their own which they are following. These plans are frequently utterly disregarded by the "grown-up." If they must be interfered with, let it be with some explanation and consideration for the children.

The small daughter of a young couple was playing contentedly on the hearth by her father's feet when her mother called from upstairs for her to come to bed. Two or three minutes more and Betty could have completed the task she had in hand and, had mother known this, she would have waited before calling her. With a quivering chin and eyes filled with tears Betty turned to her father saying, "But, Daddy, I don't want to go. I want to finish." Father could see the little girl's point, and his answer was, "That's too bad, Betty. Mother didn't know how near through you were, or she would have let you finish; but never mind, 'orders is

orders,' so run off to bed." And off she went. In this way he showed that he sympathized with her in her disappointment and that he expected her to meet it bravely, and he also upheld the mother in her request—all in a considerate, understanding way.

It might here be said that one of the fundamental rules of child training should be that parents present a united front to the child. If differences in judgment occur, let them be settled in private.

There is no finer or more important job than being a parent. This generation or the next will not handle it perfectly. There is a great deal to learn, but much will be accomplished if the approach to the problems of childhood is not blocked nor impeded by anger, fear, over-solicitude, or the idea that being a parent means at all times being obeyed. Kindness, common sense, and an effort to understand the child's own attitude toward his difficulties will do much to bring about an intelligent solution for most of the problems.

"The Bible says there is gnashing of teeth in hell. If these were sound teeth the outlook would not be so discouraging; but most people have decayed and sensitive teeth before they get to their final reward, and gnashing these doubtless serves to make hell live up to the advance notions."

NO VENTILATION—SIX LIVES LOST

Recently in a village in the eastern part of the State volunteer firemen, arriving at a burning bungalow shortly after midnight, are reported to have found every window tightly closed and securely fastened and the rooms festooned with soot, presumably from two kerosene heaters. Huddled in corners were the bodies of the owner, his wife and four children. A fifth child, a girl of sixteen, escaped by breaking the glass in one of the windows.

From such evidence as can be gathered it appears that a visitor left the house about an hour previous to the time when the flames were discovered; that the family then retired leaving the two kerosene heaters burning and

that no provision for ventilation of the bed-rooms was made. From the location of the bodies it is probable that the victims were partially asphyxiated when aroused by the flames.

Whether or not the evidence as here recorded is in accord with the facts will probably never be known. The tragedy, however, should indelibly impress two health rules on the mind of every person in the State, namely: never to retire without first extinguishing every flame except those in standard heaters, stoves or ranges, and second, to have adequate ventilation in bed-rooms during hours of sleep.—*Health News, N. Y.*

CARE OF THE TOOTHBRUSH

Very few people know how to care for a toothbrush.

When buying a toothbrush get one that is small enough to reach the back surface of the last tooth in the mouth and that will go under the tongue when cleaning the inside surfaces of the lower teeth.

After using the brush rinse it well; warm water, not hot, is best because all tooth powders and pastes have soap in them. Tooth paste has glycerine in it. These materials as well as the dirt and food left on it from the brushing should be washed out of the brush.

Hang the brush in a clean, dry, and if possible sunny place. Never keep toothbrushes in a dusty dark corner.

Cleanse the brush once a week. The best way to do this is to moisten the brush, and fill the bristles as full as possible with common salt. Then place the brush in a clean SUNNY spot. The chemical action produced by the sun, sterilizes the brush without ruining it as boiling will do.

Many people keep two brushes in use all the time. This method is very good for those who do not like to use a soft brush. By being used every other time the brushes have plenty of time to dry and the bristles to stiffen.

Discard any old brush that has become caked with dirt and tooth paste at the base of the bundles of bristles.—*Connecticut Health Bulletin*.

SEX HYGIENE

The most important act of a living thing is the reproduction of itself. With its death all its interests stop, and nothing matters. With its reproduction its interests continue and give things their meaning. We have a long history of human life since Adam. It has been a continuous thing every moment since the beginning. But the long span of life has been lived only a generation at a time, by men and women who live only a comparatively short time. The continuation of life depends upon the renewing of it every few years.

The sex act is the act by which the individual reproduces himself. It is the act which stops or continues life. And sex health largely determines the quality of life which is passed on. As a link in the chain of the race, the boy and the girl are of sufficient importance to justify the use of any terms which are necessary to give them the information about themselves that they need in order to understand themselves and to solve their sex problems wisely. It is the duty of parents, teachers and physicians to give them this information early enough in life to make sure that they get it from intelligent, clean and serious people rather than from ignorant, lewd and frivolous ones, as they often do. As soon as the child manifests curiosity about

such matters he should be told the simple truth, plainly and honestly.

The lowest forms of life have only one cell, like a house of one brick. These forms reproduce by simple division of one cell into two cells. No part dies or is lost.

As we go up the scale we come to a type in which two cells unite and fuse to form one cell. This new cell then divides and redivides to form a greater number of cells.

In still higher types the cells do not separate, each to itself, when they are split off, but stick together and arrange themselves, like bricks laid to form a house, according to a plan, to form a body like our own or like a tree. Then male and female types appear, and each one sets aside special cells to fuse with the special cells of the other. This fusion forms the new cell from which the new body grows.

In the springtime the oak tree has two kinds of flowers. One kind produces the pollen or male cells. The other kind produces the female cells. The wind dusts the pollen on the female flower and the male cell combines with the female cell. A new cell forms and during the summer it develops into a small tree, so small that it is closely folded inside a thin shell, which is developed around it, and by fall it is an acorn.

The acorn is a small tree in a shell waiting for the proper conditions of the warmth and moisture of spring to make it burst its shell, sprout and grow.

In chickens the rooster carries the male cell and the hen carries the female cell. By the union of these two cells in the hen a new cell is formed which collects yolk and white around it for food, and encloses itself in a shell. In this form as a finished egg, it is laid by the hen. If this egg is kept at body temperature by a hen or an incubator the reproductive cell in the egg grows, uses up the yolk and white of the egg for nourishment and in three weeks, steps out of the shell as a new chicken.

In human beings the man carries the male cell and the woman the female cell. In the sex act the male cell is deposited where it finds its way to the female cell in the womb of the woman where the two cells unite to form a new cell from which a new baby grows. Instead of three weeks, as in the case of the chicken, in nine months a new baby steps out into the world. It is supplied with warmth and nourishment from the mother during this time. Birds, beasts and human beings all grow from a single cell, formed by the union of a special cell each from the male and the female.

The sex organs of the man are the testicles in the scrotum, the seminal vesicles at the neck of the bladder and the penis. The male cells for reproduction are produced in the testicles along with a secretion which carries them up into the seminal vesicles. In the sex act the seminal vesicles contract and force the secretion containing the cells for reproduction, out into the urethra, through the penis to the entrance of the uterus of the woman.

The sex organs of the woman are the uterus, a hollow muscular organ; two tubes, one on each side of the uterus, each leading from the cavity of the uterus to an ovary in each flank. The ovaries in the woman correspond to the testicles in the man. They produce the female cells for reproduction. These cells

pass from the ovaries through the tubes to the cavity of the uterus. In or near the cavity of the uterus the male and female cells meet. They fuse to form a new cell. The new cell grows and forms a new baby.

Now, that we understand the structure of the sex organs, what will be the result if they become diseased? In the man, if the testicles are diseased, no cells will be produced. If the passages are closed by disease, the cells which are produced in the testicles cannot get out. And the man cannot become a father. In the woman, if the ovaries are diseased, no cells will be produced. If the tubes leading from the ovaries are closed by disease the cells which the ovaries produce cannot get out. And the woman cannot become a mother.

The disease which most often causes these conditions is gonorrhea (clap). In the man it begins in the urethra and spreads backward toward the sex gland. It does not always go this far, but it often does, and the consequences is castration. In the woman it begins in the urethra or in the entrance to the uterus and spreads upwards to the tubes and from the tubes outward to the ovaries. This is the usual course in women. The tubes become sealed off at both ends. Not only are the cells from the ovaries prevented from reaching the uterus, but the middle of the tube sealed off at the ends becomes an abscess. Then she is a sick woman for life. An operation is the only cure, and in the operation it is often necessary to remove the ovaries with the tubes.

Many of the tragedies of innocent married women are due to the mistakes of well meaning but mistaken husbands. Men who have had gonorrhea, but think that they are cured, marry with all feeling of safety. But in a year or two a wife with one child or with no child at all fades and possibly becomes an invalid from sexual derangement. The man who thought he was well had the living germs of gonorrhea sleeping in his sex glands and in his sex acts they were thrown out and passed into the uterus of the woman. He has unintentionally given her the disease and

she and his children bear the penalty of his infection.

Syphilis is a disease which is usually transmitted in the sex act. It is a constitutional disease which affects the entire body and in its last stages it causes disease of the heart and arteries, and paralysis and insanity which are incurable. It is the disease, spoken of in the Bible, which visits the sins of the father upon the third and fourth generations.

The sex energy is the most vital energy of a living thing. In a man it determines whether he shall be a master or servant. A colt that is sexually healthy develops into a high grade spirited, strong horse that carries an arched neck and is anxious for a race. If a boy is castrated he will not make a successful football player nor lead his class in school. He lacks the secretions of his sex glands, which, if absorbed into his circulation would stimulate his nerves and brain and furnish him endurance for hard work. If a boy spends his sex energy by self-abuse or in other sexual dissipation, the same thing happens. The vitality which should go to build nerve, brain and brawn is wasted. Such men cannot father the strongest sons, and they themselves are not the leaders in their own communities. Until marriage all energy should be diverted into channels of study and training for the fullest development of the body and the brain of the individual. After marriage it will be divided between reproduction and the using of the faculties which he developed before his sex life began. Then when his sex life begins he is reproducing himself at his best. And the race is much stronger as the result of the sex suppression, and the full development of the mind and the body of the individual before he turns his attention to his sex life.

The company of fast and immoral people is unprofitable because it arouses passions which should remain asleep and arrests mental development. It costs you your most valuable energy, for which there is nothing in return. In addition to arresting your development and dissipating your energy, it may incur

disease which will destroy your ability to become a parent. If girls are "fast" with you they are probably "fast" with others, although they may be clever enough to keep you from thinking so. Practically all prostitutes have gonorrhea or syphilis or both. Many men have no children or have blind and deformed children as the result of only one such party.

A thing which is often misunderstood and which quacks make much of, is seminal emissions at night. An occasional emission in the case of a man of clean life is perfectly normal. If the bladder becomes overfilled with water during sleep it presses upon the vesicles and may produce irritation enough to cause them to empty themselves. If there has been sexual excitement which overfills the vesicles with semen the discharge is still more likely to occur. If under such conditions the individual drinks coffee or whiskey or other stimulants which fills the bladder with urine and increases the irritability of the seminal vesicles a night seminal emission is even still more likely to occur. As many as three or four emissions may occur monthly without meaning anything abnormal, although some people do not have them at all. A temperate life of regular habits of eating, sleeping, bathing and exercise, and avoiding sexual excitement, is the best way to prevent them.

No child should be permitted to grow up with a physical handicap which modern science can correct. Every child is entitled to a fair chance to make his way among his fellows without the limitations of which accompany a conspicuous, unsightly or dangerous deformity or defect.—C. N. JOHNSON, D.D.S., President-elect American Dental Association.

The study of healthful living must be more than personal and public hygiene concerned with physical and bodily health; it must also deal with healthy mental life; and to be complete it must touch sound health or social welfare of society.—DR. MAURICE BIGELOW.

THE STORY OF THE BATH

Mr. Lewis W. Britton, associate editor of the Domestic Engineering Publications of Chicago, recently prepared for the New York State Department of Health "The Story of the Bath," which relates in semi-humorous vein the history of bathing from early times to the present.

"This is not a bedtime story," said Br. Britton. "It is a bathtime story. Do you ever think, as you slip gracefully on the soap, that the history of your bathtub reaches back into the days before people had soap on which to slip? There are, of course, stories of the bath that aren't true. I refer to the stories young boys tell of baths they take when not under a watchful eye.

"When Egypt wore the crown of civilization, the Egyptians were frequent bathers; when Greece was the glory of the world, her bathing was the glory of the Greeks; when all roads led to Rome, all feet led to the Roman baths.

"In Japan where everybody takes a bath a day and apologizes for not taking two, progress moves at a swift pace. In Russia, where millions of people get only three baths in their whole lives—one after they are born, one before they are married, and one after they die—there is stagnation, poverty, misery.

"So far as we know, the first bathroom was in the city of Cnossos, on the island of Crete, four thousand years ago. The ruins of a much later model, dating back only twenty-five hundred years, have been found in Tigrus, which is in Greece.

"The Greeks were the first to use bath tubs, though the tubs they used were not tubs at all. They were bowls—overgrown punch bowls, you might say, which rested upon pedestals three feet high. They were large enough to hold the water for a bath, but not large enough to hold the bather. The bather stood on a stone slab, dipped water from a bowl and poured it over his body. The Greeks regarded warm water as weakening—'effeminate' I think they called it—and so they took their baths cold.

"Among other things, Moses taught hygiene, sanitation and the fine art of living. He knew that to keep clean is to prevent disease, and to prevent disease is to build a strong race of people.

"The Roman bath was called Therma, meaning heat, from which we get thermos—thermos bottle. The Thermas did not have canned music, electric lights nor ash trays, but in magnificence, they outshone any club of this year of peace and plenty.

"Rome knew only two classes of people—the washed and the unwashed. And then, as now, the unwashed were crowded beyond the pale of polite society.

"The largest Therma covered a square mile of ground. The huge Diocletian could take care of thirty-two hundred bathers at one time, while the Caracalla, the finest of them all, had room for half as many. Besides hot and cold baths, the Thermas were provided with perspiring rooms, dressing rooms, swimming pools, athletic fields, gymnasiums, lecture halls, and places for rest, refreshment and conversation. And there were Thermas for women as well as for men.

"In those public baths the Romans exercised, kept their bodies clean, stimulated the circulation of their blood, rested, enjoyed the companionship of their fellows and fed their souls with beautiful carvings of ancient sculptors—all for one quadrans, which in Uncle Sam's money, would be one-fourth of one cent.

"For six hundred years, so Pliny, the historian, says, Rome used no medicines but her baths.

"A real Roman cleansing consisted of a sweat, a scrape and a shower. Or, as the invention of the shower was yet to be, perhaps 'pouring' is a better word. That is, after a sweat and scrape, water was poured over the body until it was washed clean. Then came a massage or rubdown, followed by a good rest. Thus from Rome, by the way of Turkey, arrived the Turkish bath, which finally reached America in 1865.

"A clean nation is a progressive nation, and a progressive nation is a ruling nation. But alas, alack, the thirst for power—the spirit of conquest reaching out and out for more and more—and Rome crumbled, and progress crumbled with her. And the world went to sleep and slept for a thousand years, or to say it in another way, a thousand years without a bath.

"A thousand years without a bath. Surely those were Dark Ages—dark with dirt. But wait:

"The Order of the Bath, from whence emerged the Knights of the Bath, was a little pleasantry set agoing by Henry the Fourth of England in the year thirteen hundred ninety-nine. But was it a pleasantry? One can never tell about an Englishman. Henry may have been serious. He lived in a serious time, and serious times make serious people. Europe was beginning to run its eyes and creep out of the filth of ten mouldy centuries. Perhaps King Henry thought it time to wash up, which is to wake up.

"In days of old, the knights were bold," so the poet wrote—but not bold enough to take a bath. Henry knew this. He knew that a knight shied at water like an elephant shies at a mouse. Hence the Order of the Bath.

"Candidates for this order were selected by the King. But, before a candidate could be initiated, he must take a bath. Ah! there was the rub!

"Having been led into the bath, and having survived the shock, the knight became a shining example to others, who, though less favored, were equally in need of water.

"More than three thousand years after Moses went up into the mountain and forgot to come back, another teacher, John Wesley, the first Methodist, was riding along a road in England when he came to the dirty little village of Burslem.

"It so happened that in Burslem there lived a poor, lame potter by the name of Josiah Wedgwood. This potter was to become the richest man in England, who up to that time had made his own fortune; also, he was

to become the grandfather of Charles Darwin, the world's greatest scientist.

"Now Wedgwood was a worker who mixed much teaching with his work. John Wesley drew rein as he saw Wedgwood trying to teach his potters the lesson Moses had tried to teach—that keeping clean increased health, which increases energy, which increases efficiency. And there, sitting on his horse, and seeing what he saw, Wesley spoke for the first time the now famous phrase: 'Cleanliness is next to Godliness.'

"And Wedgwood looked up, smiled and added: 'Yes, and sometimes it is next to impossible.'

"Great as we are, and smart as we are, we Americans have not moved so fast, sanitarily speaking. It is only a hundred years since the first pumping station in this country started to pump. Chicago was our first city to have a real sewerage system, and that was not until 1855. We had no public baths until 1891. Even today some families think so little of their bath tubs that they use them for coal or vegetable bins.

"The science of living, or sanitation—they mean the same—has to do with heat, light, water, cleanliness and ventilation. And these have to do with the five most important things of life—comfort, health, ambition, efficiency, happiness. Where sanitation is a stranger, sickness is a constant guest."

It has been wisely said that spite and ill nature are the most expensive luxuries of life.

We are continually in the presence of disease germs; almost daily we are exposed to contagious or infectious diseases, yet the body in health is able to protect itself and ward off the casual agents of disease. The first general biological law or general attribute of living matter is that of self-preservation. The first biological acts of living protoplasm are, therefore, nutritional. For perfect health there must be *appropriation, assimilation and elimination*.—DR. CHARLES CLYDE SUTTER.

FOR 1926 I RESOLVE



*IN ALL WAYS
TO GUARD MY HEALTH
AND
TO DISCOVER
WAYS AND MEANS
OF BECOMING
HEALTHIER AND HAPPIER
AND THEREBY
BE MORE USEFUL
TO MYSELF AND THE STATE*



The

The Health Bulletin

Published by THE NORTH CAROLINA STATE BOARD OF HEALTH

This Bulletin will be sent free to any citizen of the State upon request.

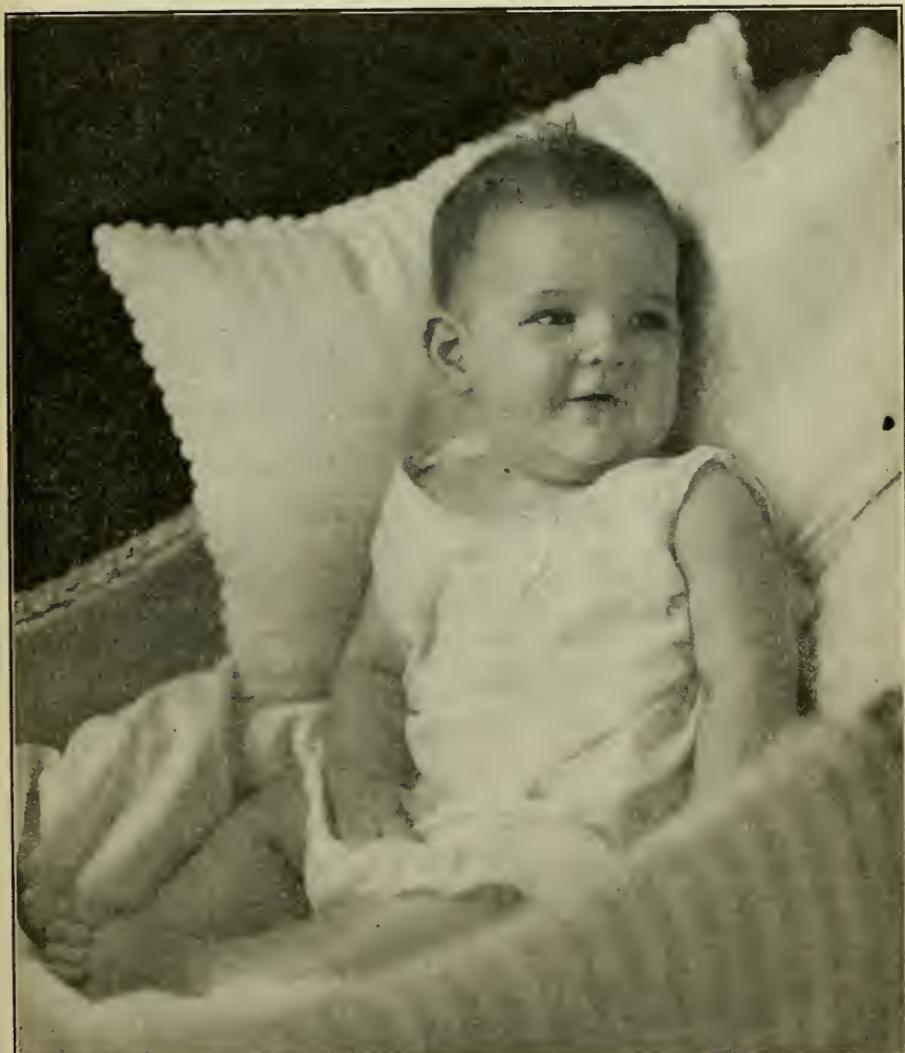
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FEBRUARY, 1926

No. 2

HEALTH—THE STATE'S GREATEST ASSET



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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
Cancer	German Measles	Scarlet Fever
Catarrh	Hookworm Disease	Smallpox
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Diphtheria	Pellagra	Venereal Diseases
Don't Spit Placards	Public Health Laws	Water Supplies
Eyes	Prenatal Care	Whooping Cough
Flies		

FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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THE Health Bulletin



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NORTH CAROLINA OYSTERS

A dainty morsel that will tickle the palate of the most fastidious epicurean!

What?

No oysters of the Atlantic coast are more luscious and none are more absolutely free from any possibility of contamination than are those taken from North Carolina waters.

Throughout the entire length of the North Carolina coast line there extends a sand bank upon which the tides and storms of the mighty Atlantic beat. Behind this bank of sand (which varies in width from a few yards to three miles) there are sounds and bays, with relatively very shallow and quiet water. Back of this shallow water, on the mainland, are many miles of lowland and marsh, upon which there are no large cities and where the population is sparse. These thousands of square miles of shallow water, fed daily through the inlets, by the tides, with fresh sea water, and isolated from human habitation, furnish an almost unlimited area for ideal oyster beds. These beds, protected from the elements by a natural barrier, and protected from pollution by a wide area of sparsely settled country, are capable of producing, and do produce a superior quality of shell fish perfectly safe for human consumption.

For lack of concerted effort on the part of the oystermen this great North Carolina harvest has gone, year after year, to the advertised markets of other coast states.

For this reason the oyster scare of last year, when cases of typhoid fever were traced to raw oysters, resulted in as great demoralization of the North Carolina oyster industry as it did in those regions containing polluted beds. There was no justification for this, for

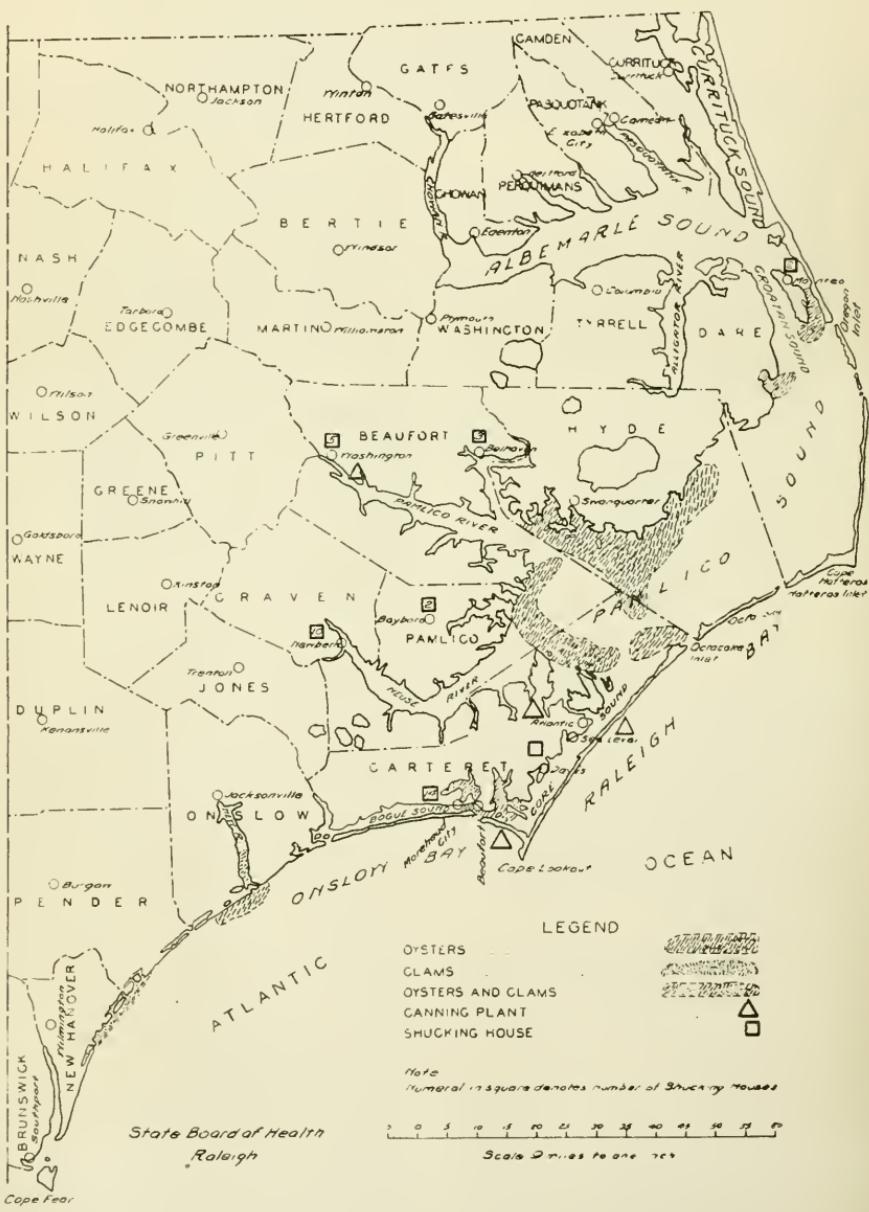
North Carolina oysters were always pure and wholesome. The trouble was that they were sold under foreign brands from doubtful markets.

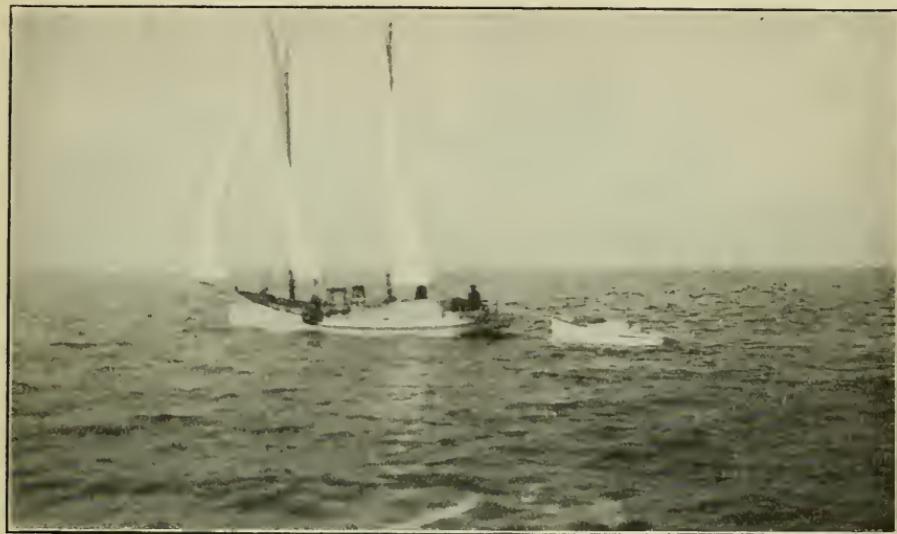
The North Carolina Fisheries Commission knew, and the oystermen knew, that North Carolina oysters were safe and that they were suffering unjustly for the faults of others. The demoralized condition of the industry last year brought the state face to face with the necessity of proving this fact to the world. The experience was not only an expensive one to the producer, but deprived the consumer of an abundant supply of pure and wholesome food. It no doubt, however, was a blessing in disguise. It taught the state to market its own pure products under its own state brands.

Assisted by the Governor to finance the plans, the State Board of Health, working in conjunction with the Fisheries Commission and directed by the United States Public Health Service, equipped one of the Commission's patrol boats, the "Pamlico," with laboratory suitable for operating over North Carolina oyster beds, making bacteriological examinations of shell fish and run tests, and analysis of the top and bottom waters of the sounds. To date the reports of the results of the findings of the scientists on board show that there is not sufficient evidence of contamination to condemn a single bed where oysters are being taken. The entire area has now been covered and every North Carolina oyster has been proven beyond peradventure to be safe.

With a proven safe original supply the next move was to throw additional safeguards around the handling of oysters on board the boats, in the shucking houses and canning plants. A survey has been made of these plants,

MAP SHOWING DISTRIBUTION OF
SHELLFISH PRODUCTION AND
OYSTER SHUCKING HOUSES
ALONG THE COAST OF NORTH CAROLINA

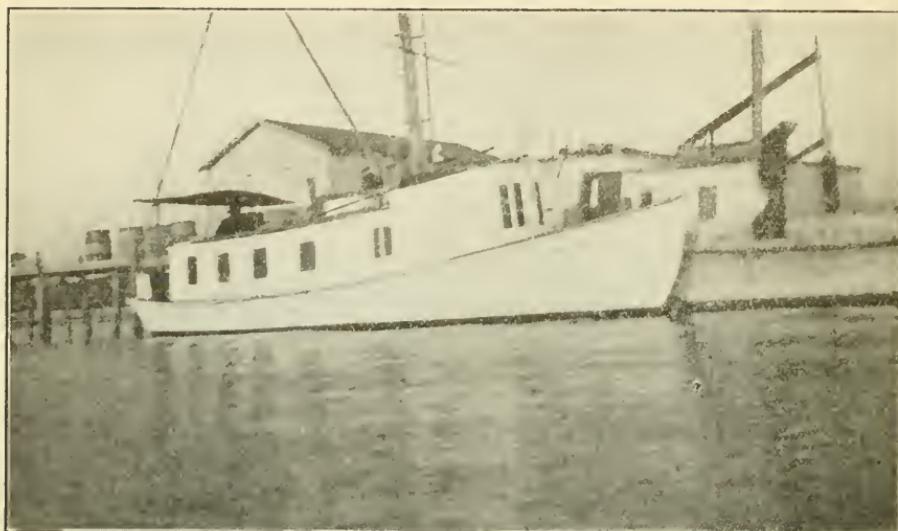




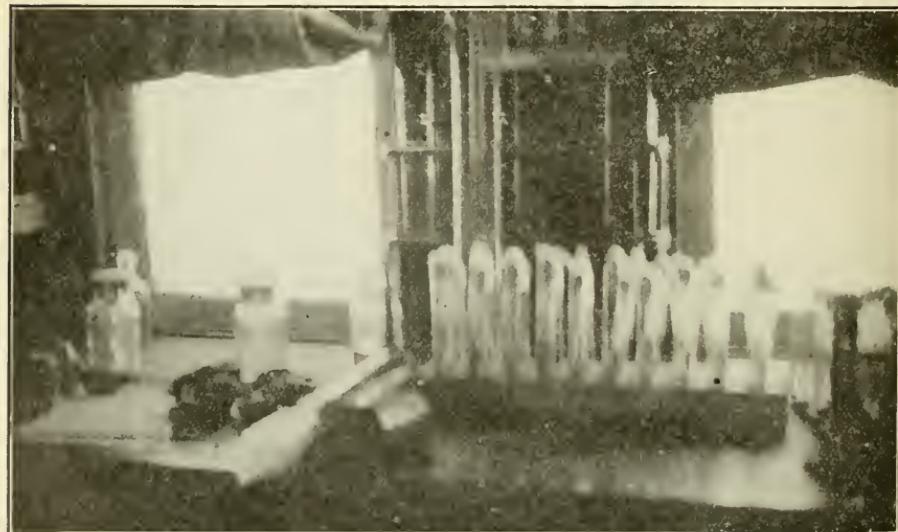
An oyster boat on its way to join the fleet.



An oyster fleet dredging oysters.



The "Pamlico," a former patrol boat, equipped with complete laboratory, for the examination of shellfish, and making water analysis.



An inside view of one side of the laboratory on the "Pamlico."

and the operators have been found to be very glad and anxious to provide every suggested measure, in the way of steam sterilizers, enamel pails, etc., intended for additional safety.

Having secured a standard of safety complying with every sanitary requirement it was next necessary to provide an inspection system and organization that would guarantee the maintenance of this condition. The laboratory boat,

Thus, whether sold within the state or taken without the state, every North Carolina oyster intended for market must pass this rigid inspection. Pure to start with, every step from bed to table is carefully guarded.

Although the catch last season was fully 33 1-3% less than normal because of the unfavorable publicity, and did not by any means exhaust the available supply, there were:



A steaming plant on Core Sound. Oysters are not the only pure sea food handled at this port, see the fish nets drying on the reels in the foreground.

the "Pamlico" with its complete laboratory equipment and competent laboratory personnel, remains permanently on the job. A corps of inspectors in small power boats are scattered throughout the area and every cargo of oysters is inspected. An inspection fee of 1 1/4 cents per bushel is charged, which sum is applied toward maintenance of the system. At the time of inspection the inspector gives the skipper not only his tax receipt, but also a sanitary certificate. Before he can sell his cargo to shuckers or canners he must produce this receipt and certificate. Since all oyster boats leaving North Carolina waters for other markets must pass through the Dismal Swamp canal, an inspector is stationed at the locks in this canal and no cargo of oysters can leave the state without complying with the law.

Dredged in N. C. waters	301,095 bu.
Exported in the shell....	30,245 bu.
Steamed within the	
state, but exported to	
to be sold under for-	
ign label	211,047 bu.
Shucked within the	
state and exported	
fresh to be sold under	
foreign label	58,303 bu.
Sold in shell within the	
state	1,500 bu.

This brings us to the most lamentable phase of the oyster situation.

Although North Carolina oysters are the best and purest on the market, the consumer has not been so advised.

The above figures furnished by the Fisheries Commissioner for last season show that practically the entire North Carolina oyster crop was disposed of

incognito. Thirty thousand bushels were taken in the shell outside the state to be shucked and sold under a foreign label. About 270,000 bushels (one bushel or tub of best grade oysters will shuck about one gallon) were steamed or shucked within the state but taken out of the state without label to be marketed under a foreign label. Many of these were shipped back into the state for consumption. The consumer really ate North Carolina oysters but thought he was getting an out-of-the-state product.

With all this round about handling there is not only much delay in reaching the dealer, but the dealer pays an average of \$1.00 per gallon more for North Carolina oysters which he buys from a Norfolk or Baltimore shipper than he would pay for the same oysters bought from a North Carolina shipper.

The dealer can scarcely be blamed

for this for he must supply what his customers call for—they are the ones who pay the bill. The customer has eaten "Norfolk" and "Baltimore" oysters so long (without knowing that in many instances they came from North Carolina waters) that he thinks he must have "Norfolk" or "Baltimore" oysters.

When consumers learn the facts and call for "North Carolina oysters" the dealers will be glad to supply them.

The appended list shows the name, address and permit number of 74 North Carolina packers and shippers. Shipping tins are now labeled "N. C. Permit No....."

When your dealer shows you a can with this label stamped in the tin or painted thereon you may be sure that the oysters it contained when it left the hands of the packer were safe for food.

LIST OF OYSTER SHUCKERS AND PACKERS IN NORTH CAROLINA

Name	Address	Permit Number
Woodland & Company	Morehead City	N. C. 1
Southgate Packing Co.	Beaufort	N. C. 2
Washington Fish Co.	Washington	N. C. 3
George N. Ives	New Bern	N. C. 4
G. W. Bowden	New Bern	N. C. 5
Lupton Fish and Oyster Co.	New Bern	N. C. 6
Reuben Williams	Belhaven	N. C. 7
George Baker	Belhaven	N. C. 8
George Moore	Washington	N. C. 9
P. Speight	New Bern	N. C. 10
E. S. Lupton	New Bern	N. C. 11
S. F. McCotter	Vandemere	N. C. 12
Charles H. Squires	New Bern	N. C. 13
J. W. Rollins	Manteo	N. C. 14
S. E. Styron	Davis	N. C. 15
Almon Hamilton	New Bern	N. C. 16
Wilbert Lewis	Stacy	N. C. 17
C. W. Greene	New Bern	N. C. 18
Ford Seafood Company	Manteo	N. C. 19
Manning Brothers	New Bern	N. C. 20
Amos H. Dudley	Morehead City	N. C. 21
A. M. Boyd	Morehead City	N. C. 22
U. S. Boyd	Morehead City	N. C. 23
Swindell-Fulford Co.	Washington	N. C. 24
Norfolk-Southern Meat Market	New Bern	N. C. 25
H. J. Shaw	New Bern	N. C. 26
A. Marbley	Morehead City	N. C. 27
George Dudley	Morehead City	N. C. 28
John Henry Beeton	Morehead City	N. C. 29
Elihu Boyd	Morehead City	N. C. 30
Stephen Davis	Marshallberg	N. C. 31
Amos Dudley	Morehead City	N. C. 32
Walter Bell	Morehead City	N. C. 33
Pamlico Fish Company	Washington	N. C. 34

LIST OF OYSTER SHUCKERS AND PACKERS—Continued

Name	Address	Permit Number
Eastern Fish Company.....	Washington.....	N. C. 35
Henrietta Carter.....	Morehead City.....	N. C. 36
George R. Russell.....	Beaufort, R. F. D.....	N. C. 37
Henry Bryant.....	Morehead City.....	N. C. 38
James T. Salter.....	Davis.....	N. C. 39
Willis Seafood Co.....	Beaufort.....	N. C. 40
John Monroe.....	Morehead City.....	N. C. 41
Jim Tillery.....	Morehead City.....	N. C. 42
W. P. Boyd.....	Morehead City.....	N. C. 43
Piner Brothers.....	Morehead City.....	N. C. 44
Adams & Company.....	Morehead City.....	N. C. 45
Tom T. Lassiter.....	New Bern.....	N. C. 46
C. H. Harris.....	New Bern.....	N. C. 47
Tolson-Smith.....	Morehead City.....	N. C. 48
Charles V. Webb.....	Morehead City.....	N. C. 49
Duffy Wade.....	Morehead City.....	N. C. 50
Haywood Bell.....	Morehead City.....	N. C. 51
Mott Hester.....	Morehead City.....	N. C. 52
Emma Dudley.....	Morehead City.....	N. C. 53
A. W. Walston.....	New Bern.....	N. C. 54
Bert Tillery.....	Morehead City.....	N. C. 55
Delia Jones.....	Morehead City.....	N. C. 56
V. Taylor Packing Co.....	Sealevel.....	N. C. 57
Ernest Mattocks.....	Morehead City.....	N. C. 58
W. H. Varnum.....	Supply.....	N. C. 59
George Gorham.....	Washington.....	N. C. 60
R. T. Alford.....	Seagate.....	N. C. 61
J. F. Morris & Son.....	New Bern.....	N. C. 62
Frank Ewing.....	Wilmington.....	N. C. 63
T. J. Franks.....	Seagate.....	N. C. 64
C. L. Bowden.....	Wilmington.....	N. C. 65
Lender Swindell.....	James City.....	N. C. 66
W. I. Wilson.....	Wilmington.....	N. C. 67
J. O. Bowden.....	Wilmington.....	N. C. 68
Jim Pigott.....	Morehead City.....	N. C. 69
A. M. Pigott.....	Shallotte.....	N. C. 70
A. H. Parker.....	Shallotte.....	N. C. 71
J. E. Hines.....	Seagate.....	N. C. 72
J. L. Phillips.....	Washington.....	N. C. 73
E. M. Chadwick.....	Gloucester.....	N. C. 74

FIVE THOUSAND DEATHS WITHOUT MEDICAL CARE

During the year 1924 there were in North Carolina 5,515 persons who died without medical care. That is, there were this number whose death certificate show no doctor attended them. In addition to this number there were many more for whom the doctor was called only at the last moment. In this case he signed the certificate but actually had not attended the patient during the illness.

Many of these deaths could have been prevented by the aid of a physician. And this is the lamentable thing. What does it avail for medical science to be

efficient in the curing of disease if medical science has no opportunity to exercise its skill?

We cannot believe it was physically impossible for some physician to have reached practically every one of these unattended deaths. As a class, no profession is more liberal with its services, therefore it is hardly probable that any one of these unattended deaths could not have gotten a physician had an effort been made to do so, however poor the patient may have been.

Furthermore, society is generally awake to the needs of its fellows and

provision is quite frequently made to care for those, at public expense, who are themselves unable to bear the expense. The only actual reason then for these unattended deaths is a matter of ignorance—or carelessness. Ignorance on the part of the family—or carelessness on the part of society.

Public sentiment throughout the state should be aroused to the degree that those responsible should be held in disgrace if they allow any person in the state to die without every effort being made to secure adequate medical care.

Privilege brings responsibility and every person who is granted the privilege of wielding an influence in his community is held morally responsible for that influence. These are the persons—these intelligent persons with influence—who are responsible for these five or six thousand unattended deaths each year in North Carolina. "Am I my brother's keeper?" is a question that must have an individual—a personal—answer. But privilege is never given except with commensurate responsibility.

An incident comes to mind, of which the fact of every detail can be vouched for, which illustrates an almost universal situation. The mother of nine children was taken seriously and mortally ill. The father was an honest, hard-working man whose every effort and every penny of earning was devoted to his family. They lived in a rather densely populated and wealthy county. The sick mother was taken to a hospital where she remained until it seemed impossible for the father to raise more money to pay hospital bills. The physicians attending her were the best in the country but her malady could not be cured and she was taken home. One of the physicians who had seen her in the hospital, along with the other physicians, undertook to attend her at home, although he knew he could not in any possible way expect any pay, and knew that her illness would be prolonged. None of the surgeons who had attended her in the hospital had received any pay and did not expect any. This physician visited her in the home 83 times. He took with him in consultation, at different times, six different physicians. He did, at the house, three minor operations which required the assistance of his office

nurse. The minimum total fees this doctor should have received for his services to that home would have been at least \$300, yet he did the work as willingly and as efficiently without receiving one penny as if he had known the money was forthcoming. This case is no exception. Doctors are doing the same thing everywhere.

In this case the responsibility was no more on this doctor as a citizen of his community than it was on every other citizen. The doctor pays his city, county, state and federal taxes, and is charged by his state a special tax of \$25 per year for the "privilege" of practicing medicine. The burden is a community burden and in this one case this doctor paid, in services and expense, the equivalent of \$300 tax, over and above all the other taxes which the butcher and baker and candlestick-maker had to pay. And he paid a special tax of \$25 per year for the privilege of doing it.

Today the doctor called ten miles in the country to see a deserving, but poor patient, will usually go, (doctors are human and there are some who would not go) but first he must drive by the filling station to get gas for his automobile. This he pays for in cash. Then he remembers that his medicine case needs filling, (for this is ten miles in the country) so he drives by the drug store, and some way even drug supply houses have a habit of insisting that drugs be paid for. Finally after taking two or three dollars in cash out of his pocket he goes to his patient. He returns with a clear conscience but wonders where he will get the price of a beefsteak and a loaf of bread to carry home for his supper.

There were very few of these five or six thousand persons who died unattended in this state in one year who could not have got medical aid in some manner. There is no spot in the state where you, who read this, could not have very soon got medical aid had your child, your wife or husband, or your parent been sick unto death. "Where there is a will there is a way" and YOU would have found a way.

The responsibility is yours and mine to see that unattended deaths do not occur. As the matter now stands, the charity of the medical profession.

(freely offered to the needy individual, but NOT to the well-to-do city, county or state) may have to be accepted. As soon as arrangements can be made, the burden should be distributed to the shoulders of those whose duty it is to bear it. The county hospital is one

plan advocated by many, and is a plan which deserves the most serious consideration.

The following table is appended purely as a statement of facts. There is no intent to make comparisons and no need of further comment.

Table showing the total number of deaths during 1924 by race and by counties. Also showing the number of deaths by race unattended by physician.

COUNTY	Physicians in County	Total Deaths				Number of Deaths Unattended by Physicians				Per Cent. of Deaths Unattended			
			White	Colored	Indian		White	Colored	Indian		White	Colored	Indian
Alamance	30	400	283	117	-----	26	15	11	-----	6.5	6.1	9.3	-----
Alexander	5	98	92	6	-----	19	17	2	-----	19.3	17.3	33.3	-----
Alleghany	8	60	55	5	-----	18	17	1	-----	30.0	30.9	20.0	-----
Anson	13	330	144	186	-----	95	29	66	-----	23.7	20.1	35.4	-----
Ashe	15	140	136	4	-----	69	66	3	-----	49.2	48.5	75.0	-----
Avery	5	64	59	5	-----	22	21	1	-----	34.3	35.5	20.0	-----
Beaufort	22	521	248	273	-----	92	23	69	-----	17.6	9.2	25.2	-----
Bertie	13	333	128	210	-----	121	16	105	-----	35.7	12.5	50.0	-----
Bladen	7	248	123	124	1	122	43	79	-----	49.1	34.9	63.7	-----
Brunswick	2	196	93	103	-----	57	21	36	-----	29.0	22.5	34.9	-----
Buncombe	112	1,311	1,032	279	-----	80	50	30	-----	6.1	4.8	10.7	-----
Burke	19	375	321	54	-----	61	41	20	-----	16.2	12.7	37.0	-----
Cabarrus	24	393	279	114	-----	24	11	13	-----	6.1	3.9	11.4	-----
Caldwell	13	214	175	39	-----	46	37	9	-----	21.4	21.1	23.0	-----
Camden	4	58	26	32	-----	9	2	7	-----	15.5	7.6	7.7	-----
Carteret	12	164	132	32	-----	16	13	3	-----	9.7	9.8	9.3	-----
Caswell	5	164	70	94	-----	38	8	30	-----	23.1	2.7	31.9	-----
Catawba	20	358	295	63	-----	44	29	15	-----	12.2	9.8	23.8	-----
Chatham	13	268	179	89	-----	50	15	35	-----	18.6	8.3	39.3	-----
Cherokee	14	131	128	3	-----	29	29	-----	-----	22.1	22.6	-----	-----
Chowan	4	130	59	71	-----	32	11	21	-----	24.6	18.6	29.5	-----
Clay	3	48	48	-----	-----	13	13	-----	-----	27.0	27.0	-----	-----
Cleveland	23	392	295	97	-----	51	30	21	-----	13.0	10.1	21.6	-----
Columbus	15	389	213	172	4	129	57	71	1	33.1	26.7	55.0	25.0
Craven	23	435	156	278	-----	87	15	72	-----	20.0	9.6	25.8	-----
Cumberland	24	510	290	218	2	45	8	37	-----	8.8	2.7	16.9	-----
Currituck	4	86	44	42	-----	18	3	15	-----	40.9	6.8	35.7	-----
Dare	3	43	38	5	-----	20	17	3	-----	52.6	44.7	60.0	-----
Davidson	21	438	364	74	-----	51	37	14	-----	14.0	10.1	18.9	-----
Davie	7	150	111	39	-----	21	8	16	-----	16.0	7.2	41.0	-----
Duplin	13	372	205	167	-----	71	27	44	-----	19.0	13.1	26.3	-----
Durham	44	791	419	372	-----	20	4	16	-----	2.5	.9	4.3	-----
Edgecombe	14	545	185	360	-----	75	13	62	-----	13.7	7.0	17.2	-----
Forsyth	77	1,388	698	690	-----	168	55	113	-----	12.1	7.8	16.3	-----
Franklin	9	337	144	193	-----	41	11	30	-----	12.1	7.6	15.5	-----
Gaston	44	683	503	180	-----	59	37	22	-----	8.6	7.3	12.2	-----
Gates	3	97	48	49	-----	45	15	30	-----	46.3	31.2	61.2	-----
Graham	3	29	28	-----	1	11	11	-----	-----	37.9	39.2	-----	-----
Granville	12	303	150	153	-----	50	11	36	-----	16.5	9.3	23.5	-----
Greene	6	176	76	100	-----	40	8	32	-----	22.7	10.5	21.0	-----
Guilford	90	1,176	799	377	-----	34	13	21	-----	2.8	1.6	5.5	-----
Halifax	24	580	197	383	-----	155	19	136	-----	26.7	9.6	35.5	-----
Harnett	18	327	208	118	1	58	33	25	-----	17.7	15.8	21.1	-----
Haywood	16	221	206	15	-----	32	31	1	-----	14.4	15.0	6.6	-----
Henderson	18	217	174	43	-----	17	14	3	-----	7.8	8.0	6.9	-----

TABLE SHOWING THE TOTAL NUMBER OF DEATHS DURING 1924—Continued

County	Physicians in County	Total Deaths	White			Colored			Number of Deaths Unattended by Physicians	White			Colored			Per Cent of Deaths Unattended
Hertford.....	10	241	66	175	-----	56	6	50	-----	23.2	9.0	28.5	-----	-----	-----	
Hoke.....	7	185	51	132	2	40	2	38	-----	21.6	3.9	28.7	-----	-----	-----	
Hyde.....	5	98	41	57	-----	63	21	42	-----	64.2	51.2	73.6	-----	-----	-----	
Iredell.....	26	456	319	137	-----	42	24	18	-----	9.2	7.5	13.1	-----	-----	-----	
Jackson.....	8	132	121	6	5	38	37	1	-----	28.7	30.5	16.6	-----	-----	-----	
Johnston.....	25	580	406	174	-----	101	56	45	-----	17.4	13.7	25.9	-----	-----	-----	
Jones.....	4	97	40	57	-----	30	10	20	-----	30.9	25.0	35.0	-----	-----	-----	
Lee.....	14	201	124	77	-----	13	6	7	-----	6.4	4.8	9.0	-----	-----	-----	
Lenoir.....	25	423	215	208	-----	87	28	59	-----	20.5	13.0	28.3	-----	-----	-----	
Lincoln.....	14	181	142	42	-----	18	12	6	-----	9.7	8.4	14.2	-----	-----	-----	
Macon.....	7	161	149	12	-----	48	48	-----	-----	29.8	32.2	-----	-----	-----	-----	
Madison.....	14	210	206	4	-----	85	83	2	-----	40.4	40.2	50.0	-----	-----	-----	
Martin.....	11	279	136	143	-----	85	23	62	-----	30.4	16.9	43.3	-----	-----	-----	
McDowell.....	8	176	145	31	-----	36	25	11	-----	20.4	17.2	35.4	-----	-----	-----	
Mecklenburg.....	111	1,195	644	551	-----	84	23	61	-----	7.0	3.5	11.0	-----	-----	-----	
Mitchell.....	10	99	99	-----	44	44	-----	-----	-----	44.4	44.4	-----	-----	-----	-----	
Montgomery.....	10	132	77	55	-----	22	7	15	-----	16.6	9.0	27.2	-----	-----	-----	
Moore.....	25	219	152	67	-----	25	13	12	-----	11.4	8.5	17.9	-----	-----	-----	
Nash.....	33	619	316	303	-----	97	46	51	-----	15.6	14.5	16.8	-----	-----	-----	
New Hanover.....	37	698	317	381	-----	61	13	48	-----	8.7	4.1	12.5	-----	-----	-----	
Northampton.....	11	247	83	164	-----	66	13	53	-----	26.7	15.6	32.3	-----	-----	-----	
Onslow.....	7	190	130	60	-----	67	40	27	-----	35.2	30.7	45.0	-----	-----	-----	
Orange.....	17	216	121	95	-----	41	12	29	-----	18.9	9.9	30.5	-----	-----	-----	
Pamlico.....	3	96	58	38	-----	28	11	17	-----	29.0	18.9	44.7	-----	-----	-----	
Pasquotank.....	13	284	132	152	-----	20	2	18	-----	7.0	1.5	11.8	-----	-----	-----	
Pender.....	4	210	79	131	-----	67	14	53	-----	31.9	17.7	40.4	-----	-----	-----	
Perquimans.....	4	141	59	82	-----	31	8	23	-----	21.9	13.5	28.0	-----	-----	-----	
Person.....	9	235	121	107	7	54	12	36	6	22.9	9.9	33.6	85.7	-----	-----	
Pitt.....	34	614	273	341	-----	181	55	126	-----	29.4	20.1	36.9	-----	-----	-----	
Polk.....	7	93	87	6	-----	6	6	-----	-----	6.4	6.8	-----	-----	-----	-----	
Randolph.....	19	367	316	51	-----	43	35	8	-----	13.6	11.0	15.6	-----	-----	-----	
Richmond.....	21	342	167	175	-----	56	17	39	-----	16.3	10.1	22.2	-----	-----	-----	
Robeson.....	29	619	275	230	114	138	39	60	39	22.2	14.1	26.0	34.2	-----	-----	
Rockingham.....	23	479	351	128	-----	52	33	19	-----	10.8	9.4	14.8	-----	-----	-----	
Rowan.....	37	484	311	173	-----	28	11	17	-----	5.7	3.5	9.8	-----	-----	-----	
Rutherford.....	19	406	347	59	-----	31	19	12	-----	7.6	5.4	20.3	-----	-----	-----	
Sampson.....	18	430	247	175	8	98	38	54	6	22.7	15.3	30.8	75.0	-----	-----	
Scotland.....	12	214	90	122	2	49	14	34	1	22.8	15.5	27.8	50.0	-----	-----	
Stanly.....	17	283	210	73	-----	58	37	21	-----	20.4	17.6	28.7	-----	-----	-----	
Stokes.....	14	215	175	40	-----	34	22	12	-----	15.9	12.5	30.0	-----	-----	-----	
Surry.....	30	320	275	45	-----	50	39	11	-----	15.6	14.1	24.4	-----	-----	-----	
Swain.....	9	128	105	-----	23	33	25	-----	8	25.7	23.8	-----	-----	-----	34.9	
Transylvania.....	9	72	64	8	-----	15	14	1	-----	20.8	21.8	12.5	-----	-----	-----	
Tyrrell.....	1	67	45	22	-----	23	15	8	-----	34.3	33.3	36.3	-----	-----	-----	
Union.....	23	373	239	133	1	45	20	25	-----	12.0	9.3	18.7	-----	-----	-----	
Vance.....	16	333	154	179	-----	57	15	42	-----	17.1	9.7	23.4	-----	-----	-----	
Wake.....	81	1,243	633	610	107	28	79	-----	-----	8.6	4.4	12.9	-----	-----	-----	
Warren.....	10	290	89	201	-----	61	12	49	-----	21.0	13.4	24.3	-----	-----	-----	
Washington.....	9	151	73	78	-----	52	17	35	-----	34.4	23.2	44.8	-----	-----	-----	
Watauga.....	11	129	125	4	-----	65	63	2	-----	50.3	50.4	50.0	-----	-----	-----	
Wayne.....	39	674	258	416	-----	70	20	50	-----	10.3	7.7	12.0	-----	-----	-----	
Wilkes.....	14	360	331	29	-----	125	116	9	-----	34.7	35.0	31.0	-----	-----	-----	
Wilson.....	36	591	273	318	-----	145	41	104	-----	24.5	15.0	32.7	-----	-----	-----	
Yadkin.....	8	154	130	24	-----	24	16	8	-----	15.5	12.3	33.3	-----	-----	-----	
Yancey.....	8	105	101	4	-----	36	35	1	-----	34.2	34.6	25.0	-----	-----	-----	

FIFTEEN CASES OF TYPHOID IN ONE FAMILY

"Jack" Nelson, colored, and a household of 14 have all been stricken with typhoid fever. This is a record for Richmond County. Jack Nelson's home is situated at the eastern side of the city of Rockingham, within fifty yards of the city limits.

Louisa Nelson, aged three, was feeling badly, complaining mostly of her throat, and Dr. Quick was called to see her about the middle of September, 1925. There was nothing at the time to suggest typhoid fever in this three-year-old child, but there was an inflamed throat which the doctor treated. Her throat condition improved, but her general condition of lassitude and malaise continued. Diarrhea and headache were present the last three weeks of October. As often happens in such families, the doctor was not called again until early in November when four other children were stricken at about the same time with symptoms more suspicious of typhoid than Louisa had shown. Blood specimens of all of them, including Louisa, were taken and cultured and all found positive for typhoid. The remaining members of the family became ill of the disease, singly and in groups, on December 1st, 2nd, 5th, 8th, and 12th. Not one of the entire family had been vaccinated for typhoid.

Where did this epidemic start? Jack and his family had been at home all summer and fall. They had had no visitors and none of them were near a case of typhoid. All of the privies in the locality were of the approved sanitary fly-proof type and the distance of the home from any case of fever made the probability remote of its having been carried by flies, although the house was not screened and flies were abundant.

The family did not use city water and during the summer when their own well went dry they began using water from the well of a colored neighbor, 200 feet away. This neighbor, George Briscoe, had had typhoid fever twenty years before, but analysis of the water in the well was negative and cultures of Briscoe's urine and feces, made at the State Laboratory, were negative. The family used no milk so this possible source was also ruled out.

Where did Louisa, the little three-year-old girl, get typhoid? The latter cases were of course easy to explain by contact with her. Louisa evidently started all the trouble, but where did Louisa get it?

Getting information from Jack and his wife, Amanda, was tedious business, but Amanda mentioned that when their well went dry she took her clothes to the creek to wash rather than carry the water from the neighbor's well. This creek is 300 yards behind the Nelson home. When Jack and the older children went out to work Amanda took the three youngest children with her where she could watch them while she did her washing. Of course the weather in August and September was hot and the children played in the water. This creek is known to be polluted with Rockingham sewage, and Louisa, if she did not actually drink the water, got it in her mouth, or at least on her hands which were often in her mouth.

Louisa got her typhoid by playing in a polluted creek.

Not one of the family had been vaccinated although Dr. A. B. McCreary, the county Health Officer, would have gladly done it free if Jack himself was unable to pay for it being done by a private physician. Jack's failure to have this done cost the lives of two of his children (two of them died), beside putting himself and all his family in bed with typhoid.

ANOTHER COUNTY SANATORIUM

Mecklenburg County is preparing to care for its tuberculous citizens with a county sanatorium of 120 beds. Following a recent successful election on the question of issuing bonds for this purpose, the county commissioners have let the contract for erection of buildings to cost \$97,304. The sanatorium is to be located about thirteen miles from Charlotte. Work is to begin at once. The plans are similar to those of the Guilford County sanatorium, which has been in operation about two years. It will be of two stories and will accommodate 96 white and 24 negro patients.

VALUE OF MILK AND THE COST OF BOTTLED MILK

FRANK E. RICE, A.B., PH.D., Professor of Biological and Agricultural Chemistry, North Carolina State College of Engineering and Agriculture

So much has been said about the value of milk by investigators, doctors, dietitians, health clowns and others that the topic might seem to be pretty well covered. But, like the minister's text, a great deal can be said about it, and it can be viewed from a great many angles without exhausting the subject.

A quart of bottled milk in Raleigh costs from 20 cents down to 14 cents; dip milk, perhaps, a little less. Do we get value received, particularly when we pay the higher prices? An answer to this question will here be attempted.

The chemical way of thinking of anything is to tear it apart into its constituents, and consider the various parts as to quality and value. In this way it is sometimes possible to place a money value on very complex substances. This also is the way the merchant arrives at the worth of his store —by making an inventory of each and everything in it, placing a cash value on it, and finally adding up the list.

The main constituents of milk are fat, sugar, protein, minerals, vitamin A, vitamin B, vitamin C and water. Now suppose we look at the quality of these substances and then later at their cash values.

As far as behavior in the body is concerned, the chemical substance in milk fat is not much different from most other fats: lard, oleomargarine, cottonseed oil, olive oil are just as well utilized. Beef fat is possibly a little more difficult to digest on account of its hardness. Milk fat does, however, have a slight advantage over all other forms of fat, including butter, in that it is in a finely divided condition. On this account it is more easily digested than where fat is in a mass, as it is in butter.

Milk sugar is as nutritious as ordinary granulated sugar, and some authorities consider it just a little bet-

ter, due to the fact that it is absorbed into the blood a little more slowly than common sugar, which in this case happens to be a good thing.

When we come to protein, we find that milk protein is more valuable than protein from vegetables and grains or from meat. In the first place, it is almost perfectly balanced, that is—of all the various amino acids that go to make up protein, those that are absolutely necessary for life are found in milk protein. This is not true, by any means, of the vegetable and grain proteins. It has frequently been mentioned in the columns of the *HEALTH BULLETIN* that a person gets pellagra probably always by subsisting on a diet of grains and fat meat, without eating any lean meat, eggs or milk, and that the best way to keep off the disease is to include one of these things in the diet.

The accompanying chart, taken from Bulletin 215 of the Connecticut Agricultural Experiment Station shows what happened to some rats when they were fed on flour alone and on gliadin alone. (The latter is one of the proteins of flour separated out in a pure form.) That the rats did not gain much in weight is shown by the fact that the curves are quite flat. However, these rats on flour plus milk, flour plus egg and flour plus meat gained rapidly and normally in weight as is shown by the sharp pitch upward of the corresponding curves. This indicates that there is something in milk protein (also meat and eggs) which supplies some deficiency in the flour proteins. Many experiments have been carried out in exactly the same way with corn meal and other plant foods, all of which show that milk protein is greatly superior to plant proteins for feeding the body.

Comparing milk protein with meat protein we find in one respect at any rate that milk protein has the advan-

tage. All lean meats leave in the body a group of complex substances called purins, and from purins uric acid is quite likely to be formed. This might never cause any trouble to some people, but to others it does. Milk protein is free from these substances.

There are a good many investigators these days who do not take much stock in the theory of auto intoxication, which is thought to be caused by putrefaction of protein food in the lower intestine. Other investigators believe they have

foods are better supplied with this substance than milk. So much has already been written of the absolute necessity of these vitamins in the diet for both youngsters and grown-ups that it is unnecessary to dwell longer on this subject.

No particular value can be attached to the water of milk except perhaps in one way. There are many people in the world who do not drink enough water; if they can be persuaded to get the milk habit, there may be less likeli-

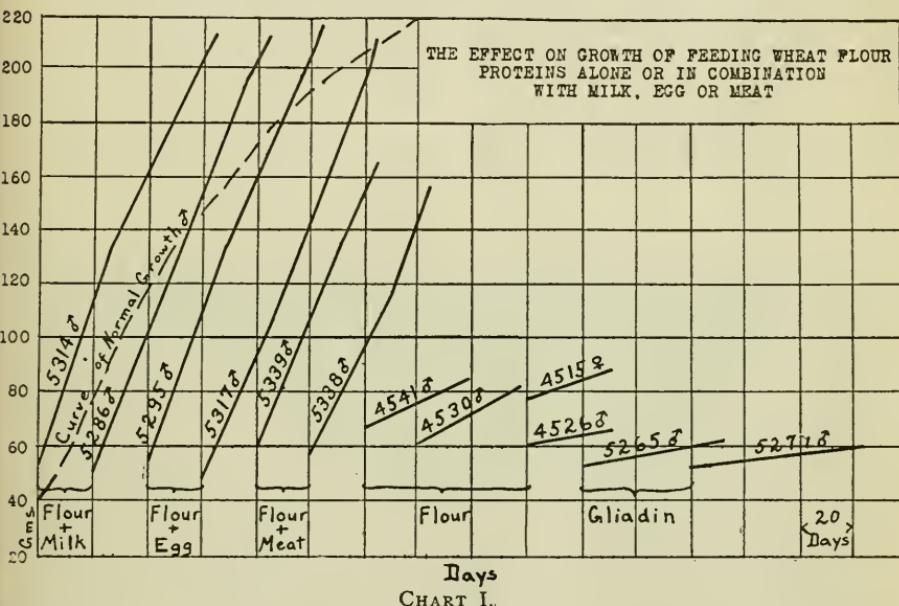


CHART I.

demonstrated that such a thing does take place and that milk protein is much less likely to cause this trouble than meat. Furthermore, the milk sugar is thought to have a retarding influence on this process greater than any other sugar. Both the milk protein and milk sugar score again.

It is necessary that minerals form a part of our food. We wouldn't live long without calcium, phosphorus, sulphur, iron, sodium and others. Milk contains all the mineral elements necessary for life and in plentiful amounts with the exception of iron.

Milk contains goodly quantities of vitamins A and B. The amount of C depends in large measure upon the character of the cow's ration; it is therefore quite variable and many other

hood that they will get too little of this very necessary substance.

Now we have seen the excellence of each of the constituents of milk. Many investigators have made a study of milk as a whole and have noted certain peculiar effects of milk in the body. It has been found to stimulate the glands of secretion in the stomach in a direct way apparently independent of the nervous system. Some people used to think that a cocktail before dinner would start the secretions and thus prepare the way for good digestion. It is now known that a drink of milk before dinner has probably as great an influence as alcohol ever did.

Milk requires less gastric juice for its digestion than most foods, and, the products of digestion are more readily

absorbed and completely utilized than perhaps any other food. If this were not so, milk would not be the ideal food for infants and invalids.

Now for the inventory: A quart of milk weighs on the average 2.15 pounds. The percentage of the various constituents depends considerably on the breed of the cow and the period of lactation, but, fair averages for the three principal substances are—3.75% fat, 5% sugar and 3.35% protein.

When we pay 60 cents per pound for butter we are paying 75 cents per pound for milk fat because butter contains 80% fat. An average cut of beef contains only 18% protein (most of the rest is water) and costs 35 cents per pound; the protein of the meat is, therefore, costing \$1.94 per pound. Sugar costs us about 6½ cents depending on whether we "cash and carry" it, or pay later.

Taking 3.75% of 2.15 pounds and charging at the rate of 75 cents per pound we get 6 cents as the value of the fat in a quart of milk. Also 3.35% of 2.15 pounds at \$1.95 per pound gives 1 cents for the protein; and 5% of 2.15 pounds at 6½ cents gives seven tenths of a cent for the sugar. The estimated value of these three constituents, then, is $6 + 14 + 0.7 = 20.7$ cents.

It is hard to evaluate other items such as the vitamins. Of course, the main reason why butter costs more than oleo or lard is that it contains vitamin A, but since we evaluated the fat of milk from the value of butter fat in butter, this is taken into account. Milk also contains considerable amounts of vitamin B. The most concentrated form of this vitamin is found in the widely advertised yeast for which you have to pay your grocer 3 or 4 cents a cake. Now nobody knows how much milk is equivalent to a cake of yeast with respect to vitamin B, but it is a fair estimate that one quart contains at least as much as is in one-tenth of a three-cent cake of yeast, which would place a cash value of 0.3 cent on the vitamin B item. This makes a total of 21 cents for the tangible value of a quart of milk.

To get the real value something should be added for the fact that the fat is in a finely divided condition,

therefore more easily digested than the fat in butter, that the protein in milk is better digested and utilized than beef protein, and something should be added also for vitamin C, the minerals and for the other points mentioned. If this were possible it would bring the value of a quart of milk well above 21 cents.

All this is not an argument that dairymen should raise the price of milk to 21 cents or more. The price in North Carolina is now higher than in most states. But the purpose of all this arithmetic is to show that even at the top price which is charged for milk in Raleigh, there is value received, and milk should not, therefore, be considered a luxury unless we consider butter, lean meat and sugar as luxuries never to be purchased, which we should not.

Neither is the purpose of the argument to urge the use of milk to the entire exclusion of other foods. Eggs and meat excel in at least one way—they are quite well supplied with iron while milk is not. Many of the excellences described for milk might hold equally well for eggs. And of course the great group of fruits and vegetables have qualities which are found in no measure in milk.

Milk is not a perfect food, as some have claimed. It is true that an infant or a grown-up could live longer on cow's milk alone than on any other single food, yet it does have its deficiencies. Aside from the points already mentioned, there is too much protein in proportion to the other constituents. If an adult tried to subsist entirely on milk, in order to get enough of the various food materials he would be getting too much water. But nobody should want to live on plain cow's milk indefinitely. It should be considered a balancing food for every member of the family and an economical one at any of the prices which we have to pay.

Disease, poverty, disappointment, and shame, are far from being, in every instance, the unavoidable doom of man. They are much more frequently the offspring of his own misguided choice.



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FREE HEALTH LITERATURE

The State Board of Health publishes monthly **THE HEALTH BULLETIN**, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
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Don't Spit Placards	Public Health Laws	Water Supplies
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FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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HOW ABOUT YOUR KIDNEYS?

If you have a "lame back" the chances are that you accuse your kidneys of causing it. If you do the chances are you are wrong. Nearly all the lame backs are caused by some trouble other than kidneys. Kidney trouble seldom causes lame backs.

The kidneys are situated just inside the big back muscles on each side of the middle of the back and just below the edge of the ribs. Their purpose is to filter out of the blood liquids carrying in solution the waste products of the body. From each kidney there is a tube, called an ureter, leading to and emptying into the bladder. The kidneys are at work all the time and the urine enters the bladder drop by drop from these two ureters. The bladder is simply a reservoir of varying size whose purpose is to collect and store the urine until a convenient time for disposing of it through one single tube called the urethra. The arrangement is the same in both males and females except that possibly the female bladder may be of slightly larger relative capacity and the urethra much shorter.

The blood vessels leading to and from the kidneys are large and the entire volume of blood in the body passes through the kidneys every few minutes. In filtering the body waste out of the blood there must be handled by the kidneys many poisonous substances and infections. Naturally the greater the dilution of these poisons the less irritating they will be to the kidney cells.

The most common diseases of the kidneys are nephritis (inflammation of the kidneys), infections and calcareous deposits (stones). Nephritis is sometimes called Bright's Disease, because it was first scientifically described by John Bright, and is an acute or chronic

inflammatory condition of the secreting kidney cells. This condition is most frequently caused by the toxins of disease which pass through the kidneys during such infectious diseases as scarlet fever, diphtheria, tonsillitis, so-called rheumatism, tooth-root abscesses and other foci of infection. There is a difference between acute and chronic nephritis, but for the purpose of this discussion it is not necessary to emphasize more than that Bright's disease is secondary to, and the result of, some prior sickness or infection. Unfortunately the symptoms of such an inflammatory process in the kidneys are usually not noticed until after serious destruction has occurred. There is no resultant pain or "lame back" and usually the condition is not known until perhaps years later when the resulting high blood pressure causes symptoms which lead the victim to a physician. Or it may be the destruction of kidney tissue results in urinary disturbances which call for the aid of a doctor. Frequently an insurance examination or some other routine examination discloses albumin or other abnormal matter in the urine. A routine health examination each year would pick up nearly all cases of Bright's disease early enough to permit treatment that would prevent serious destruction of kidney tissue.

Pus-forming bacteria get into the bladder and kidneys sometimes by the infection being carried by the blood to the kidneys from an infection in some other part of the body, perhaps from infected tonsils or teeth, and then there is really an abscess in the kidney. Such an infection is carried by the flow of urine down from the kidneys through the ureters and into the bladder. At other times an infection may get into the bladder through the urethra from

the outside and such an infection may travel against the current of urine, up from the bladder through the ureters to one or both kidneys. Pus-forming infections of kidneys and bladder are usually violent and produce severe pain and fever. Such person is very sick in bed under the care of a doctor.

We have stated that the kidneys filter from the blood fluids carrying in solution body waste. Often there is in this considerable mineral matter or lime. As the engine boiler or the teakettle, in which lime water is used, will collect scales and crusts of lime, so the kidneys and bladder will sometimes collect deposits of the mineral matter in the urine, and kidney stones or bladder stones will be formed. The difference between a kidney stone and a bladder stone is that one is in the kidney while the other is in the bladder. After such stones get large they can only be removed by crushing them or opening the bladder or kidneys and removing them. Stones in the kidney sometimes get dislodged and try to pass down with the flow of urine through the ureters. Being rough they scratch and cut the inside of the ureters and cause the most severe, excruciating pain. This is called "kidney colic." Sometimes they completely stop up the small tube and dam back the urine in the kidneys. Another cause for kidney colic is for this tube from kidneys to bladder to become kinked just as a garden hose becomes kinked. The result is damming up the urine and the distention in the tube causes the severe pain. As soon as the kink can be straightened out by movement or pressure this form of kidney colic is relieved.

An instrument called a cystoscope

HOW TO SELECT A COUNTY HEALTH OFFICER?

The county commissioners of a certain county in a western state openly did what we hope no county commissioners in North Carolina do, in effect, secretly.

A county health officer was to be appointed for 1926, and the "job" was "put up" at "public auction" to be knocked down to the lowest bidder. Of course, no matter who the man might be, the cheaper he "bid" (and consequently the less work he would do) the more likely he would be the man the

has been devised which can be introduced into the bladder and by means of very small electric lights and mirrors the entire inner surface of the bladder and all its contents may be seen. The bladder openings of the ureters may be seen and the urine seen dripping into the bladder.

When an examination of the urine shows that it contains pus then it is essential to find out if the pus is formed in the bladder or whether it is coming from one or both kidneys. By means of the cystoscope small catheters may be introduced into these ureters where they empty into the bladder and a specimen of urine taken from either or both kidneys. By this means it is easily determined whether an infection is in the bladder only or whether it comes from the kidneys, and from one or both kidneys and which kidney. At the same time antiseptic solutions may be introduced to combat the infection at the exact point where it occurs.

Any case of nephritis, cystitis (inflammation of the bladder) or both, deserves the most careful and conscientious medical care.

The important point that cannot be emphasized too strongly is that every one, no matter how healthy they may seem to be, should have a careful health examination, at least once each year. And especially should the urine be closely watched following any acute illness, such as scarlet fever, diphtheria, pneumonia, colds or influenza. All infections of tonsils, teeth, sinuses or any other focus of infection should be quickly attended to before there is much opportunity for a secondary disturbance in the kidneys.

commissioners wanted. In this case it happened that two bids were alike. One of the low bidders was Doctor A—who had held the job during 1925, and the other Doctor B—who wanted the pie in 1926.

Here was a knotty problem to be solved—even knotty for so august and intelligent a body of men as the Board of County Commissioners. Can't you hear their deliberations in the council chamber? "The place must be filled, our public auction scheme has failed

for here are two bids alike. How can this problem be solved." Finally a wise Solomon suggested that they toss a coin and a coin was tossed. Doctor B. was appointed and Doctor A who had already had his "fling" was left out.

These commissioners discharged their sworn duty (?)—they got a man. Furthermore there is no record made of any one of them suffering serious headache or mental fatigue as a result of the deliberations necessary to discharge that duty.

As between the two applicants, the tossing of a coin injected into the question an item of chance. As between the health officer and the people there was, however, no chance involved. For the people such tactics mean only one thing and that is,—the people can say "heads you win, tails we lose."

In the matter of service, even the family doctor can scarcely claim such opportunities as come to the county health officer. To a tremendous degree the health and prosperity of the pres-

ent and coming generations are determined by the work and teaching of the health officer. The community that cares for its citizenship—the community that thinks of progress will think first of what needs to be done, then hunt for the best man they can find to do it. After deciding on the work to be done and the man they want to do it, they will arrange the price. The commissioners who decide one of the most vital problems that comes before them by putting the job up at auction and then tossing a coin obviously make all other momentous decisions in an equally slip shod manner. The people who trust them deserve better than this.

Perhaps the two doctors were equally capable, we do not know. Perhaps it didn't matter which one got the place for the chances are neither one would earn the sum of money they bid,—however, little that may be, else they would never have been parties to such a plan.

THE FOOT

The normal foot possesses an almost perfect mechanical structure. It is marvelously adapted to the functions which it has to perform. These are far more complex than we are accustomed to think. In the first place the foot sustains the erect body in such a way that a line from the center of gravity would intersect midway, a line through the junction of the ankle and the foot bones.

Then there is the peculiar balance of the bones of the lower leg superimposed upon the bones of the foot. The latter connected with one another by ligaments and articulations are provided with muscular attachments. These bones are arranged to form what may be called a bridge span, combining strength and elasticity. The ends of this arch are prevented from separating by a strong fibrous band, the plantar ligament. It sometimes happens that this ligament becomes abnormally stretched. The result is the arch sinks in and becomes flattened out. We have then the distressing symptoms of flat foot, a condition very common among those who stand on their feet for many hours every day.

Sometimes the foot is constitutionally

weak and flat foot results, not because of continual pressure on the foot arch, but because this arch is not able to stand the strain of even moderate pressure.

There are diseases of the bones which give rise to a painful gait and make standing and walking almost impossible.

The foot too is subject to injuries of many kinds. It is very vascular, that is, it is rich in veins and arteries, and though the sole is protected by a very thick skin and a dense fat pad, infection is readily acquired and may become very virulent. The protection by stocking and shoe has its drawbacks. There is a tendency to perspiration greater than other parts of the body, and to a softening of the superficial tissue. Not infrequently this causes inflammation and eczematous eruptions which are hard to cure.

Nor should lockjaw be forgotten. How often do we hear the story of a nail, and not necessarily a rusty one, causing a death from this disease. Or it may be a splinter, or a cut with a hoe. Fortunately the organisms which cause

lockjaw are rare, or many more would die from wounds, splinters and nails. And fortunately, too, we have anti-serum which can protect against it and which should be used whenever there is reason to think such an infection may be acquired.

We should not forget the annoying "corn," not so prevalent now as it used

to be in the days of "needle point" shoes.

Bunion is a chronic inflammation and thickening of the skin over the junction of the big toe with the long foot bone. This distortion of the toe and the bunion are caused by improperly made shoes. The cure is surgical entirely. (*Dowling, La. State Board of Health.*)

"ITCHING"

There are many different things which cause itching on various parts of the body.

Scabies or "Itch" is a parasitic disease caused by the itch mite. This little insect burrows in the skin and produces intolerable itching. Naturally it chooses the most tender skin areas for its burrowing, such as between the fingers, the inside bend of the elbow, under the knees, the groins and the abdomen. Various preparations are on the market for the treatment of itch, but the most effective is sulphur. Sulphur mixed with vaseline or lanoline is harmless and effective, and has only the one objection of its disagreeable odor. It should be applied after a hot bath. Extreme care taken to boil all clothing and linen that may have become infected.

Itching may be caused by any thing which produces irritation of the skin,

such as woolen clothing, infrequent bathing and many forms of skin disease. The skin diseases require appropriate treatment, and some of them are very difficult to cure.

Itching from any cause may usually be greatly relieved by the application of very hot water. Dip a towel in water which is near the boiling point, then touch to the itching surface. The contact should be only instantaneous, but should be repeated many times in rapid succession. The application should be as hot as can possibly be borne without blistering. It may be used several times a day if necessary. After the hot applications, and except in those cases of skin disease where grease is contra-indicated, apply a lanoline ointment, made up of two parts of lanoline, one part boroglyc-eride, and six parts of cold cream made from white vaseline.

BRAINS AT WORK

An active brain and a willingness to work will keep the wolf from the door. They form a combination that will do more. They will fill the family larder, provide all of the other necessities of life and a few of its luxuries.

Brains without ambition to accomplish something are handicapped. Industry without brains is impotent.

Every boy has both, but mind and hands are in formative state and exceptional care and training are required to turn out a good citizen.

The boy who is constantly looking for excuses, who performs his tasks with the idea that they are irksome burdens placed upon his unwilling shoulders, is using his physical powers, but not making the best use of his mental powers.

But the boy who goes about his work in a cheerful and willing spirit,

with an active interest in what he is doing, and with a determination to do it just a little bit better than the other fellow, is using his brains as well as his hands.

The boy who displayed these commendable traits will be a persistent and determined climber, and he will find his employers, or those with whom he labors, pushing him upward as rapidly as he is willing to climb.

A combination of brains and hands when used coördinately, is close to invincible.

Every boy has them, and he should be taught how to use them. The school teachers can't do it alone, though they may be of great assistance in showing the way. Boys need encouragement and direction at home as well. As a rule, they succeed in whatever measure they receive it.

SHOULD THE PUBLIC SCHOOLS BE HEALTH CENTERS?

By J. V. DABBS, *Director Physical Education, Burlington, N. C.*

We think of the human being as something superior to the animal. The complete human personality is conceded to have at least four somewhat distinctive phases, namely, the spiritual, mental, social, and the physical. We do not question the superior value of the spiritual phase of the human personality. But there might well be a question as to the relative values of the mental, social and physical phases of our make-up.

One nationally known authority has stated that the entire human life and progress hinges around the proper functioning ability of the alimentary canal. That is, among other things it might be shown that upon a good strong physique, good health and the ability to work without being handicapped physically, depends to a very great extent the ultimate success of the average person. Think of the four phases of the personality as being the four legs of a table. If one of them is weak, broken, or patched-up, and the table is called upon to support a considerable weight, what happens? The reader will agree that the table will immediately go crashing to the floor. So with the human family, if one part of the general foursided make-up is weak, broken or otherwise useless, a crash comes with the first big crisis.

Schools of every grade have always stressed the mental phase of our personality, as was intended that they should, but stressing mental activities has been the limit of the work of the schools until comparatively recent times. Even yet, practically nothing is done for the physical development of the pupils in the schools of the country other than to promote the four major sports; that is, football, baseball, basketball, and track. Of these, only basketball has been promoted for girls, except in isolated cases, and in too many cases even the basketball that was promoted has been a detriment to the girls participating.

The ability to recognize sick or partially incapacitated pupils when they report for work is important. To know that Johnnie's eyes measure only four-tenths instead of ten-tenths, is vital to

his progress. To recognize malnutrition as a condition, as a disease, which is sapping the life of the backward pupil who is kept in after school is extremely important. And to recognize that 99 per cent of the children are not mean, but that only direction for the excess energy is needed, is of great importance to the teacher's welfare,—and religion. Then to be able to direct and control that excess of energy, to look after the health of the school "family," and to make better pupils, physically, mentally, spiritually and socially, is the work of the teacher. Physical and health education play a bigger part than any other feature in this task, because all others depend on health for maximum efficiency.

The question may well be raised by some as to why so much stress should be laid on the need of the teaching of health in the public schools. One can only realize the amazingly gross misconception of the functioning process of the laws of health when he has made a few investigations among young and old people in general and especially among the school population. A few examples of enlightening answers may help to establish this point. A sixth grade boy came into the infirmary of the school, for first aid treatment after having bitten a wart off of his hand. Questioning as to the motives of such an act brought forth the following illuminating information; he could not get the opportunity to secure the necessary requisites for curing it. But what were the remedies? First one, "steal a dish rag from some one, then throw it back of you under your door-step." "Sure Cure"! Second, "take the heart out of a horse's foot and rub it across the wart three times, and say 'Seed warts and all sorts.' Do this three times, then put the material from the horse's hoof in the fork of a tree and don't look back at it." "Sure cure, never known to fail!"

A group of about two hundred children was asked, "Why do we get sick, anyway"? One boy said, "Because we do not take enough medicine." Most of the others agreed with him. This brought to mind some childhood mem-

ories of the old home neighborhood, such as "Spring will soon be here and 'Old Granny' must get busy making the blue-mass pills for all the children and grandchildren, so she can clear out their systems for the summer, they might catch typhoid fever."

A boy came to the school infirmary with a bad sore on his leg. The nurse said, "What happened to you, boy?" The boy answered, "I fell and stuck a rusty nail in my leg, and mother put some healing salve on it." Some time later the mother was seen and a suggestion made that in this case the wound should have been thoroughly cleaned and disinfected, and that possibly iodine is as good and effective, economical disinfectant as may be needed for ordinary cuts, bruises, etc., on the skin. The hot reply came back that "The home remedy healing salve made of hog's lard, cherry bark, meadow mullein leaves and tobacco juice, is just as good as any 'store bought stuff, and after having ten children, I ought to know my own business." An emergency call to go to a home where a baby had been badly burned, resulted in finding the old "Faith-healing Granny" trying to call the fire out of the "little sinful piece of flesh that was condemned when Adam fell in the Garden." The writer saw one proud mother of seven children who was feeding a baby not over thirty months of age first from the breast, then from the bottle of cold Coca Cola and then from a box of ginger snaps, the mother occasionally taking a drink of the Coca Cola from the same bottle. A small boy was asked "What is that bundle you have tied around your neck?" "Oh," he said, "That is some magic medicine Granny makes me wear so I don't catch malaria, typhoid fever and smallpox."

There is no apparent need to multiply examples of the kind just mentioned. If anyone doubts the veracity of them, just let him take a day off and learn a great deal more for himself, no matter where he lives. But what, or where is the solution for this problem? Portia said, "Twere easier to tell twenty men what is good to do than to be one of the twenty and follow your own instructions," and we believe she was right. But we also be-

lieve we can accomplish a great amount of good through an organized and well directed program of physical and health education in our public schools. Many schools and many states already have such programs, but not all of them. "What is physical education?" "What is health education?" What should be done about both of these in our public schools? Why should we burden teachers with added responsibilities in doing work other than giv-



Not an unusual case where First Aid must be rendered by teachers.

ing the growing and developing citizens a prescribed amount of academic training?

Are not all school children well and strong? Parents will argue that their children go to school, eat three meals a day, and grow right along. So why worry about their welfare?" Oh yes, Billy has a cold most of the time, and sure he snores when sleeping, and breathes through his mouth a great part of the time. What difference does that make?" "No, he did not make his grade last year; but then, 'the teacher

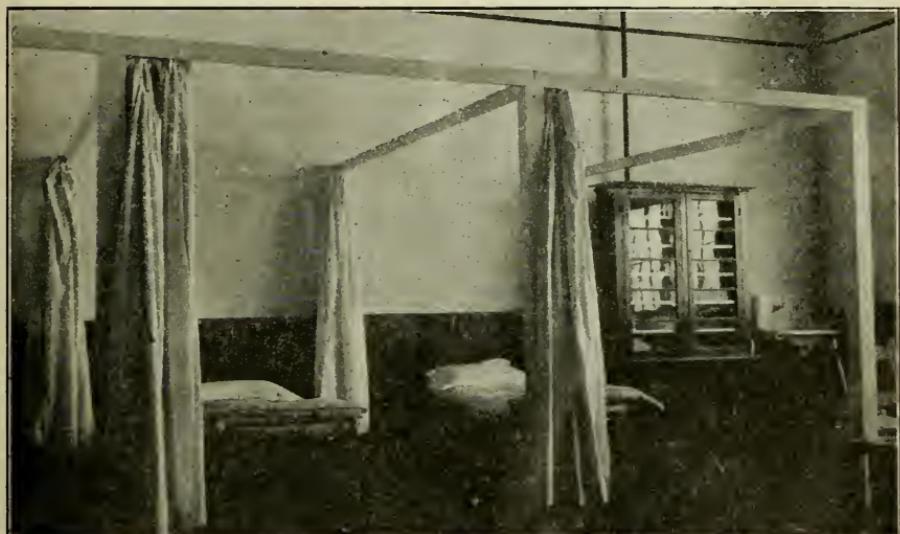
had it in for him and just would not pass him." Of course he was absent a third of the time because of bad colds, sore throat, and such "awful headaches." "The nurse tried to make us believe his eyes were bad and that they caused headaches; but there is nothing to that, we just gave him a big dose of "Liver" medicine and made him stay at home. And then as a finish to our temper that teacher came home with him one afternoon and said something about having his tonsils and adenoids removed, taking him to an "oculist" to get his eyes treated and fitted with glasses! Such an idea!

Superintendent of Schools, I am giving here a copy of his official report at the end of the session 1924-25.

Number of children examined 1869
Number of teachers examined 45

DEFECTS

Number with diseased or enlarged tonsils	666
Number with defective eyes....	226
Number with defective teeth..	579
Number with heart lesions	38
Number underweight	738
Number overweight	404
Number of deformities	8



The "Infirmary" or room for First Aid and rest for pupils who become sick or accidentally get injured during school. The family physician of sick or injured pupils is immediately called and the case turned over to him on arrival. This room was formerly a class room, but with more than 1,000 children in the building it is very valuable in its present capacity.

Why, Billy can use the glasses I bought from the traveling peddler who came by last year. Bad teeth! Mal-nutrition! Adenoids! When will these bob-haired teachers get through inventing new names for things to be the matter with the children?"

Burlington, North Carolina, is probably an average small city in most respects. During the last year and a half a licensed physician has been employed for two hours work each school day by the City School Board. With his permission and that of the City

Number with defective lungs	5
Number of partially deaf	1
Number vaccinated for small-pox	530
Number vaccinated for typhoid fever	266
Number of tonsils ordered removed by parents during the term	40
Number of emergency calls to school	10

Of course not all of those mentioned above were excessively overweight, or

excessively underweight. They were just not normal as shown by the routine examinations. However, in a survey just completed by the writer, the startling information has been obtained that 16 per cent of the white children in the grades one to seven inclusive are as much as 10 per cent or more underweight. To be underweight as much as 10 per cent or more is considered unsafe to the health, development and mental progress of a child. The most surprising and at the same time the most appalling thing about this investigation is that as the children become older, more and more of them are dangerously underweight. For example, 25 per cent of the sixth and seventh grade pupils are as much as 10 per cent or more than 10 per cent underweight.

Many cases of wonderful improvement could be cited which are the direct result of corrective medical therapeutics during the last two years. For example, one boy ten years of age who was in the first grade and whose throat and nasal cavity was so choked with tonsils and adenoids that he had to be turned over several times each night by his parents so he could breathe, is now getting along fine after an operation by the local nose and

throat specialist. Another boy gained ten pounds in two months after having a lot of rotten baby teeth pulled. He has been an honor pupil in his academic work since the corrections were made by a dentist. If space permitted many other cases could be mentioned that would help to show the value of such work. But this should be sufficient to show there are countless opportunities for improvement.

One effort that is being systematically made in the Burlington schools this year is to call the attention of parents to possible conditions of malnutrition, or other defects that affect weight, health and progress. This is done by sending a "Refer" to each parent in case the examiner finds defects in a child, and by sending a report to all parents six times during the year, indicating the actual weight, the actual height, and the normal weight of each child. A statement is added showing the amount underweight, or overweight, as the case may be. Through various agencies, including the sale of "Christmas Seals" and the generosity of local physicians, it is hoped that much more corrective work can be done during the present scholastic year.

DEATHS FROM AUTOMOBILES

DR. F. M. REGISTER, *Director Bureau of Vital Statistics*

Notwithstanding laws regulating speed, not only in incorporated towns but in the rural districts as well, laws requiring automobiles to stop before crossing railroad tracks, and officers in town and country to enforce these laws, yet deaths from automobile accidents go merrily on. Deaths from automobile accidents are on the increase.

In 1924 there were 337 deaths from automobile accidents in North Carolina, and in 1925 there were *365 deaths from automobile accidents. This includes automobile accidents at railroad crossings.

While deaths from automobiles have

increased, the deaths have not kept pace with the increase of the number of cars. In 1924 there was one death to every 758 cars; in 1925 there was one death to every 928 cars. There were in North Carolina in 1924, 1,413 deaths from all forms of accidents. Out of this number there were 337 deaths due to automobile accidents.

The death rate for automobile accidents for 1924 per one hundred thousand population was 12.3. The rate for 1925 per one hundred thousand population was 13.2.

Our figures are for immediate deaths. There will be many more deaths that can be traced back to injuries received in automobile accidents. This gradual increase in deaths from automobile ac-

*This number will be increased slightly on account of delayed certificates.

cidents is going to keep mounting unless something more is done to stop accidents than is being done now.

There should be an examination of those who run automobiles. A monthly examination of car brakes; a tightening down on those breaking our present traffic laws. The Automobile License

Bureau should have a Safety Department to examine all who obtain licenses; also have officers in each county to coöperate with the local officers in enforcing speed laws and other laws of the road. They could very well divert a part of their funds for this purpose.

FORESEES RETURN OF FAMILY DOCTOR

Is the old-fashioned family doctor about to disappear?

Many say yes. Dr. William Allen Pusey, son of a country doctor, well known Chicago specialist in skin disorders, former president of the American Medical Association and medical writer of note, says no.

"The family doctor is a necessary man for whom we have no substitute," says Dr. Pusey, "and one, therefore, whom the people will see to it that they have."

"There are many attractions to his life which we are now overlooking, but which, being essential, will come back into recognition and again influence young men to go into this sort of practice.

"The family doctor, the country doctor in particular, we will admit, has led a hard life; but hardships in life, of the sort that we have in mind when we speak of the hardships of a successful vocation, are not important objections. For the right sort of man, they furnish a stimulus that is attractive.

"There are many compensations to the country doctor besides the stimulation of a sort of adventure and the satisfaction of duty well done. The eagerness to which the doctor's coming is looked forward to, the satisfaction at his arrival, the relief he can often give in desperate situations when he is the sole reliance—there is nothing in the life of the specialist that takes the place of these things.

"If the family doctor should disappear, one of the most useful and satisfying of man's vocations would be lost."

"Recently," says Dr. Pusey, "I published a sketch of my father, who was a country doctor, analyzing, as critically as I could, the sort of professional service he performed and the sort of life he led. I suggested that he was

not an unusual type of successful family doctor. Apparently everybody that read the article at once had recalled to his mind some similar country doctor that he had known. Letters came from men all over the country, laymen as well as physicians, saying that they had known such a man in their boyhood and expressing their admiration for him. There is fortunately still a considerable number of these family doctors left.

Was Generally Useful

"The practical appeal of this old style doctor was his general usefulness in most of the ills of his people. He brought the babies into the world, he took care of the dislocations and fractures, he treated most of the minor as well as the serious illnesses; and there is general agreement in the fact that in from 85 to 90 per cent of diseases the competent general practitioner performs these services well.

"The specialist has his place, but there are certain advantages in developing usefulness in the practice of medicine, which the general practitioner has had over the specialist. He could minister to the minds of his patients better than the specialist because he had fuller knowledge of them and their problems; that is all of the credit some people would give him. But he also knew and cared for his patients as a whole. He did not confine himself to the nose, the eyes, the stomach or the skin; he was a doctor for the whole man. His patient was a man whom he knew well, probably his ancestry also, and this gave him a perspective of his case that the specialist rarely has and an insight of great value in the services he could render.

On Own Resources

"Further, he had the stimulation for the development of usefulness and resourcefulness that comes from the necessity of carrying one's own burdens. He did not have hospitals and laboratories and innumerable specialists immediately at hand to whom he could pass the troublesome duties. He was put on his own resources; and there is no training like that to develop a man.

"These things explain why the family doctor was a more useful man than a superficial view is apt to credit him with having been, and why the possibility of his passing evokes in all quarters expressions of anxiety and regret."

—Extracts from *Hygeia*.

ADULTS SHOULD SET GOOD SAFETY EXAMPLE

Fifty per cent of all accidents—40,000 in 1923—occur each year in homes in the United States. The reason is either carelessness or ignorance, says Ethel M. Hanson in an article on "Home Accidents and Their Prevention" in the January issue of *Hygeia*.

Thirteen thousand people were killed by falls last year (almost as many as were killed by automobiles). There were falls from ladders, chairs, boxes, porches, platforms, stairs, roofs, trees and poles; from slipping in bath tubs, on icy walks, greasy and soapy floors, highly polished surfaces, banana peels and refuse; from tripping over furniture, lumber, refuse and from losing balance.

"The remedies for this situation," adds Miss Hanson, "are education in home safety through the agencies that reach all classes of homes in the community, proper inspection of building operations to insure safe conditions in the original construction, and adequate play facilities where safe conditions for play cannot be provided at homes.

"Correct habits on the part of adults will set a proper example for the child and will prevent many injuries. Adults should familiarize themselves with the safety and educational organizations of the community in which they live."

THE DETECTION OF INSIDIOUS MALADIES

The accident at Readville on the New Haven Road was a notable one. A train was operated at high speed through a crossover, and the Interstate Commerce Commission's bureau of safety again suggests that if the crossover had been longer, so that the angle of deflection would have been less sharp, the train might have remained on the rails even at an improper speed. The real point, however, is that the engineer did not control the speed in approaching the point at which his train was to be diverted from one track to another. There was no question that the signals had been set to give adequate warning that the switch was open for this train.

Why, then, did the engineer disregard the signal? For once in such cases, a fact of significance has been disclosed. The medical examiner for Suffolk County, who performed the autopsy on the body of the dead engineer, reported that he found an oedema of the brain, a condition which clouds the sensorium and may cause irrationality at odd moments and in varying degrees.

The engineer believed himself and was believed by his associates and the officials, to be in perfect physical condition. He had not been attended by a physician for five years, and he had undergone no general medical examination. Such an examination, it is believed, would have shown high blood pressure and other conditions indicating that he should be relieved of the exactions of line running, though not necessarily retired from service.

The accident shows that from the public point of view, as well as from the point of view of the enginemen themselves, more frequent physical examination of men intrusted with the responsibility of operating trains is imperative.—*Republican*.

No individual and no health department alone can ever cope with the fly problem. But all of us, working together, can very effectively cope with it.

A MODERN BUSINESS MAN AT 83

Not long ago a well dressed, alert man, apparently about 60, walked into the office of this paper and inquired for a lady whose desk is here, remarking incidentally that "She used to go to school to me."

As the lady herself is well past 60, the writer took the liberty of asking the visitor how old he might himself be, and was surprised to have him acknowledge 83 years.

He proved to be Abijah E. Brooks, a candy manufacturer of Grand Rapids, Mich., revisiting his old New England home.

Mr. Brooks is the active head of a concern which sells a half million dollars worth of candy every year. He goes to the office every day, usually walking, although his sons have autos and would gladly transport him. He stays on the job all through regular business hours, although he says that since he was 70 he has relinquished a good deal of the detail he used to carry.

At home, he cares for the lawn, and does a good deal of work around the place, thus in addition to his walking, securing abundant physical exercise.

Likes Croquet

He does not own up to having any fads or amusements outside his business, and a game of cards in the evening. He doesn't care much for the theater, and regards the movies as "too hard work," although he likes a good play.

"I'll tell you one thing I enjoy, although I have no chance at it now," he said, "and that is a game of croquet."

OBJECTIVES OF A PROGRAM OF SCHOOL HEALTH EDUCATION

1. To give teachers knowledge of their own personal health, of methods in presenting health education, of sources of material and of suitable text books.

2. To provide an intensive nutrition program for every under-nourished child.

3. To train the well child in good health habits that will keep him

Mr. Brooks has never been sick "to amount to anything," except that when about 50 he had kidney trouble which passed away in a few months after appropriate treatment. During all his early life he was, however, subject to headaches which were so severe that "I couldn't work, nor lie down, nor sit up." These headaches have disappeared in later life.

Asked how he cared for himself to keep so vigorous and efficient he said that he was moderate in eating, and in particular ate very little meat. One cup of tea or coffee of moderate strength is all he allows himself.

His usual breakfast is cereal, toast and coffee with fruit—orange or perhaps melon. His dinner is the old New England one of meat, potato and vegetables with perhaps a piece of pie, and his supper is simple bread and butter and sauce and cake.

"I am fond of cakes," he said, "and I eat a little candy every day." As a rule, however, I eat nothing between meals.

No Tobacco

He has no use for tobacco nor liquor of any kind, and attributes his longevity and vigor to regular habits, moderation in food and plenty of work. "Work," he says, "never hurt any one. What hurts is worry.

"As far as my advice to a young man is concerned, tell him to live within his means, save a little all the time, and attend to business when he has business without giving too much time to frolic." — *The Healthy Home.*

healthy. Vital, happy, merry children, calm-eyed, strong, able and willing to control the habits which maintain personal health, ready and eager to do their part in guarding and preserving the health of others.

4. To give every child each year the benefit of at least one good physical examination by a competent physician. This will help to determine what the

true state of the health of the children is and which of them require special nutritional care.

"The average teacher in the average school will never teach hygiene until there are hours set apart for the subject, until she is graded and promoted by her work in hygiene as in other subjects, and until she is trained in hygiene in a Normal School as she is trained in arithmetic or English grammar today."—C. E. A. WINSLOW.

"It is a matter of great importance in the teaching of children of school age that they receive their instruction from someone who will serve as a model of physical fitness, beauty and health."—E. V. MCCOLLUM.

The right of every child to pursue his work in school free from the handicap of any physical defect which can be remedied is coming more and more to be recognized. The physical examination of school children has for its purpose not only the prevention of the spread of communicable diseases but also the detection of physical defects.

Dr. R. L. Carlton, in an article on health education, says: "Medical inspection of health service in the schools was originally designed to deal with the child, but experience is proving that it is of great value to the community as a whole, in providing an opportunity for the Department of Health and cooperation agencies to deal with home conditions revealed by physical defects or faulty habits in the children. Experience is proving also that the best results are obtained from a health service in the schools when close cooperation is maintained between doctors, dentists, nurses, teachers and social workers, and, above all, with the mothers and fathers."

HEALTH TRAINING

Health education in our public schools of the State is now demanding the consideration which it has so long deserved.

A very large majority of the children who attend the public schools do not have the home environment or intelligent example in the home which

would serve to teach the principles of healthy living.

Along with other activities the school is obligated to teach health, because of the changing sociological conditions. In most instances this work is progressing rapidly and excellent work is being done in this line.

A few schools, however, adhere to the practice of spending time and money on the candidates for major athletics instead of supplying competent help for the physically delinquent child. When a candidate presents himself for major athletics it is reasonable to presume that he is already in first-class physical condition and has little need of the services of a trained instructor.

On the other hand, there are in every school a number of children who need careful treatment and supervision to help them reach the stage of normal health, with a body equal to that of classmates with whom they have to compete.

The whole world concedes the fact that physical delinquency is a handicap in the battle of life, and science has proved that correction can much more easily be made in the young child than in advanced youth.

Many colleges are turning out competent instructors who are entering the field with a wholesome purpose, and we are happy to learn that the school authorities are readily employing these graduates and that so far the number of instructors who have proved their worth is not sufficient to meet the demand.—Editorial, Roanoke *Rapids Herald*, Sept. 18, 1925.

WHY SKIN OF MODERN WOMEN IS PRETTIER

The chief reason why the young girl's skin of today is better than that of the miss of 1900 is that the modern girl is not so apt to be constipated. This is the view of a noted skin specialist who contributes to the February *Hygeia* an article on "Giving Tone to the Skin."

So prevalent was this condition twenty-five years ago that some one defined woman as a "constipated thing with a pain in her side."

"When we consider," says this medical authority on health and beauty, "that the skin is nourished by 15,000,000 papillae, four out of five of which contain a capillary loop, it is not hard to imagine the havoc that results to a beautiful skin from the constant contamination of this very abundant blood supply by toxic particles that should be passing off through the bowels."

This improvement in the skin of young women may be properly attributed to the advancement of medical science and the dissemination of this knowledge to the public.

HOW TO COOK A HUSBAND

The following recipe is recommended to domestic science classes for women by six members of the nursing and dietary service of the department, all the signatories being "unappropriated blessings":

"Great care should be exercised in selecting a husband, for upon your choice depends the method of cooking. Remember that age gives a mellow, 'mushy' product, while youth is liable to be 'green.' If you get a peach, beware; they bruise easily. But should your choice be a lemon, squeeze often and sweeten to taste.

"Little preparation for cooking is necessary if the husband is always kept clean and wholesome. Unless he is 'thick-skinned,' be careful when paring not to cut too deeply. Husbands, as a rule, do not respond to freezing, but one may be wise in using a small amount of cold water with certain types.

"Roll in fine linen, baste often, plunge occasionally into hot water, but cool quickly, and roast until tender. Add a little spice and plenty of sugar and honey, and your husband will keep indefinitely."—*Ohio Health News*.

Cleanliness offers a solution for almost every sanitary problem: it will do more than anything else to solve the fly problem.

Little flies and little children can not dwell in the same habitation; if the first aren't killed, the second probably will be.

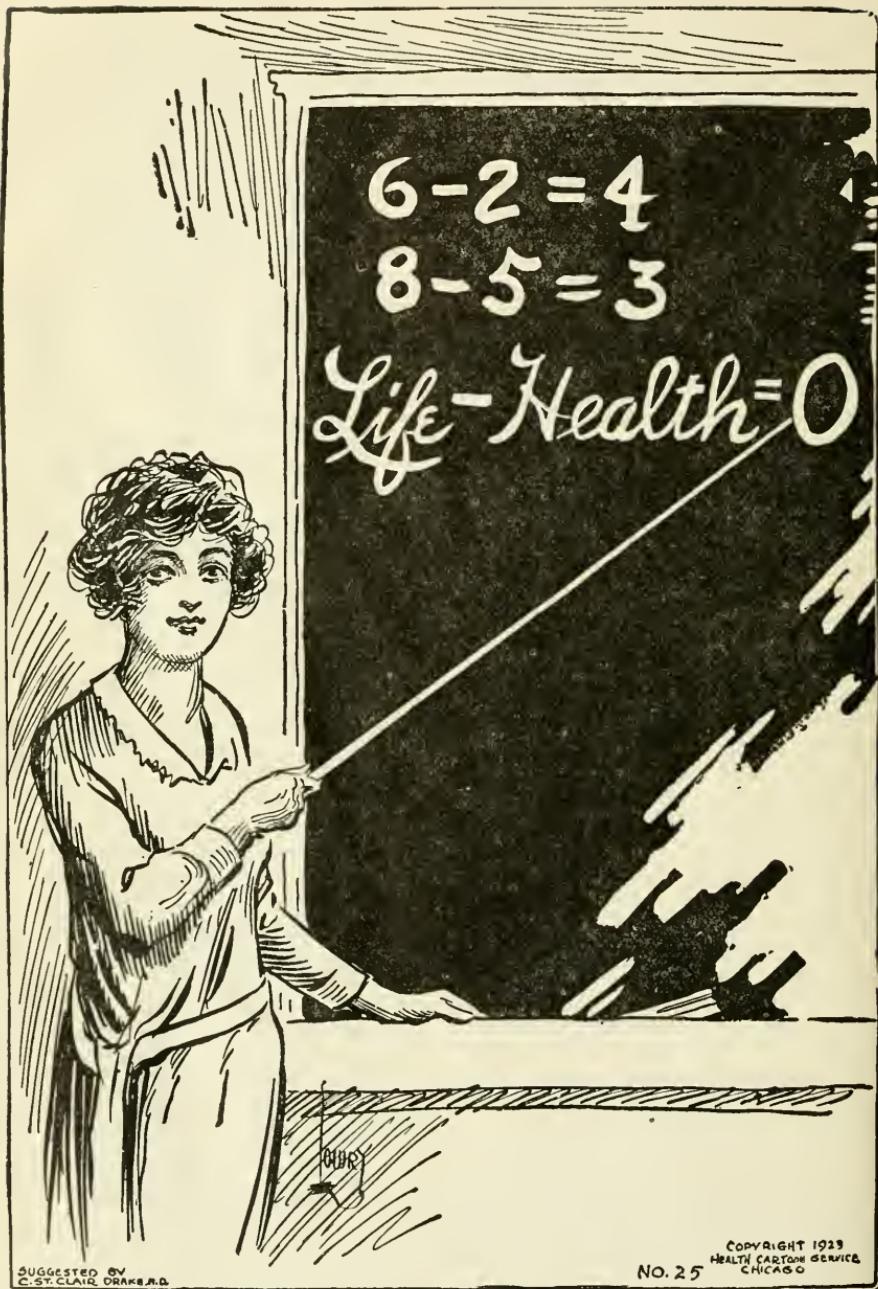
TWENTY RULES FOR PERSONAL HEALTH

Here are twenty rules for personal hygiene. *Hygeia* recommends them in its February issue, quoting them from Surgeon Allan J. McLaughlin's volume in the national health series. They are:

1. Begin with a human appraisal by having a health examination.
2. Improve immediately any defects or correct any faulty habits that such an examination may disclose.
3. Breathe fresh air all the time.
4. Get outdoors as much as you can.
5. Seek the sunshine.
6. Eat plenty of wholesome, well selected nutritious food.
7. Drink plenty of water every day.
8. Do not overeat and avoid overweight.
9. Work hard, play often, and have a good time at both.
10. Sleep enough; outdoors, if possible.
11. Exercise every day.
12. Wear sensible clothes, light and loose.
13. Be cheerful, serene and contented.
14. Don't let your nerves ever get the best of you.
15. Take proper care of your eyes and other important human organs.
16. Have a bowel movement at least once every day.
17. Keep away from persons having communicable diseases.
18. Keep poisons out of the system.
19. Get your hygienic advice from reputable, regular physicians or scientific health agencies and not from cults, quacks and "patent medicine" advertisements.
20. Stand up and face the world, for the world is all at your feet.

Neatness and order are as contagious as diphtheria. Watch your neighbor follow your example when you clean the yard, plant flowers, and care for the lawn.

SIMPLE PROBLEMS



Without Health Life Is Nothing



The Health Bulletin

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THE HOUSE-FLY

By E. ROSCOE HALL

The common house-fly is a pest,
But he must have his feed;
And things to him which seem the best,
Are not the things we need.

Upon the carcass of their dead
He fills his hungry craw;
And then he roosts upon our bread,
Defying hygiene's law.

He lights upon a pile of germs,
And gets them on his legs;
Then next, to speak in local terms,
He rides our scrambled eggs.

He even gets into our greens,
At morning, noon or night;
He dives into a dish of beans
A sad, unholy sight!

He broadcasts like a radio,
The germs that cause disease;
Why should we let him thrive and grow
And live a life of ease?

Go swat the rascals, blot them out!
From all the filthy hives;
And you will save, beyond a doubt,
A lot of useful lives.

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
Cancer	German Measles	Scarlet Fever
Catarrh	Hookworm Disease	Smallpox
Care of the Baby	Infantile Paralysis	Teeth
Constipation	Indigestion	Tuberculosis
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Clean-up Placards	Malaria	Typhoid Fever
Chickenpox	Measles	Typhoid Placards
Diphtheria	Pellagra	Venereal Diseases
Don't Spit Placards	Public Health Laws	Water Supplies
Eyes	Prenatal Care	Whooping Cough
Flies		

FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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MILK

The average of one cow to sixteen families in North Carolina is spreading the milk ration entirely too thin. Milk is essential to health, especially for children. Without it there cannot be a citizenship with a high degree of vitality. The absence of it accounts in some part for the high infant mortality in this State.

Milk is often stated to be a perfect food. By this we mean that milk contains all the essential elements for normal human growth and development.

The adequacy of a food or diet depends briefly on its containing:

1. Enough of the right sort of material to build up and repair the living tissues of the body. These body-building substances in the food are called proteins, and are found especially in milk, meat, fish, eggs, and in certain vegetables, especially beans and peas.

2. Enough substances to furnish the required energy of the body. Fats, starches and sugars are the chief energy foods, and are transformed in the body into energy for work and into body heat.

3. A variety of mineral substances, which are needed in the growth and functioning of parts of the body, such as the skeleton, the brain, the blood.

4. An adequate amount of certain substances whose nature is not yet fully known, but whose presence in the diet has been demonstrated to affect body growth in man and in animals. These substances, known as vitamins, growth determinants, are therefore essential elements in our food.

5. No substances poisonous to the average individual nor one which will

not allow of normal digestive processes.

In addition, to be properly digested and of the utmost nutritive value, articles of diet must also be of pleasing taste, palatable, and preferably of a consistency and appearance similar to the foods in customary use by the race.

Clean milk fulfills all of these requirements for an adequate food better than any other single foodstuff.

Milk, is then, in a sense, a complete food. If used as a sole food it will sustain life and allow growth. It is used as an exclusive diet for young children, but after infancy supplementary foods need to be included in the diet for the best development. For one reason, milk, which, in respect to all its ingredients, ranks among the most digestible of all animal foods, is so completely digested that there is practically no waste. Though this complete digestibility renders milk one of the most efficient foodstuffs, a certain amount of non-digestible material in the food, so-called roughage, is necessary to regulate the discharges from the digestive tract. For this reason, and for several others, a mixed diet after the first year of life is better than an exclusive milk diet.

Milk has in the curd a protein of a more valuable nature in regard to its ability for building or renewing body tissues than that found in vegetables, or even meat. There is no other animal protein procurable at so low a price.

Milk as a source of energy, or as a fuel for the body, compares most favorably with other foods. The energy value of a quart of milk is

about equivalent to that of a pound of lean meat or to eight eggs. As a source of energy cereals are, however, far cheaper than either milk, meats, or eggs, and, therefore, cereal and milk is the ideal combination of foods to furnish energy in childhood.

Calcium salts, or lime, supplied in our food are necessary not only for bone formation, but for the development of the important organs of the body, especially the various glands of internal secretion.

Of all foodstuffs, milk is the cheapest and most abundant source of calcium, and milk also provides other important mineral salts, such as potassium and phosphorus. Therefore, since growth is measured by bone formation, and since the child must have a steady, abundant supply of these essential minerals, milk should be included in every child's diet.

Unfortunately, cow's milk is low in iron content, even as compared with human milk, and this important mineral must be supplied in other foods. The prolonged exclusive use of milk after early infancy tends to produce an anemia from lack of iron in the blood. Iron can best be introduced into the diet through the early use of fruits, vegetables and whole cereals.

The abundance, character and digestibility of its proteins and its large mineral content make milk, as we have shown, a most desirable food. But, after all, the most valuable properties of milk lie in its containing an abundance of the unknown dietary factors, the vitamins which control growth and health. One of the vitamins is found chiefly in milk fat and the organic fat of certain other animals, but is not present in vegetable oils or in pork fat. Eggs and green vegetables, such as spinach and chard, do contain appreciable amounts of this vitamin, but milk is our chief source. The cream of a quart of milk contains as much of this vital substance as is found in all the skim milk left after the cream is removed. A second vitamin is present in all food consumed in its natural state and in sufficient quan-

tity to maintain health. In the manufacturing of purified foodstuffs, such as the polishing of rice or in the milling of flour, this substance is often lost, and a diet made up of denatured foods may cause disease and even death, due to deficiency in this essential substance.

A food like milk which, given in moderate amounts, combines enough of both of these vitamins to allow of normal growth and development, has a value in the human dietary greater than that of any other single food.

It is true that appetite in many cases has to be considered, and an exclusive diet of any single food substance becomes distasteful to the large majority of people and tends to lower digestive processes and to cause impaired nutrition. However, this does not mean that the child should be allowed to refuse milk as a substantial part of the daily diet, if the diet includes, as it should, several other forms of food. All normal children are better for at least one and a half pints of milk a day. Poverty, of course, may prevent this amount being provided for every child, but, if her means permit, the mother who does not furnish sufficient milk for her children and train them to drink it is not fulfilling her duty. Healthy children can be made to like a varied diet, to eat what is good for them, and to finish the entire meal provided. Patience, persistence and tact are needed to teach proper food habits to the young, and, to be effective, this discipline must be maintained from birth.

Milk may be given to the child in cooked form, as soup, weak cocoa, or flavored milk-shake. If used as a drink, it should be taken towards the last of the meal, for many children will not take sufficient other food if they fill themselves up first with milk.

Children who have too rich or too abundant diet may seem to do better with less or even without any milk, but here the fault is not primarily the quantity of milk, but the total amount of food. On the other hand,

an exclusive milk diet after the first year is ultimately harmful, and milk should not be included in the diet of the child to such an extent as to prevent the taking of an ordinary amount and variety of food. Many children can take and thrive on a

quart or more of milk a day. Very rarely a child has an idiosyncrasy for milk protein and is made ill by milk.

For healthier children, less baby deaths, and an improvement in the health of all the people, North Carolina needs more milk.

COURTESY TO CHILDREN

The polite person is ever careful not to make remarks in the hearing of adults that would wound their sensibilities. But is this equally true in regard to children? The effrontery with which elders often discuss, in the presence of children, their misfortunes or their defects is really amazing. Perhaps an insult is seldom intended and obviously it is seldom realized that children hear, or that they are influenced by, such careless remarks.

The house-mother in an institution was entertaining a guest by showing her the place and the children. In the presence of a group of children she called, "Johnny, come here, please," and then as Johnny drew nearer she added in a voice perfectly audible to Johnny and the other children, "This, Mrs. Jones, is the little boy whose mother was murdered last year by his father."

If Johnny had been twenty-five years old instead of five, it is hardly conceivable that this good mother would have made this remark in his hearing, and certainly not in the presence of a group of associates. The sorrow which had come to him was enough without having it constantly thrown in his face. Life's battle is hard enough without the added handicap of being forever branded and advertised as the son of a murderer.

If Johnny must continue to hear this story often repeated, would you wonder if he became resentful and finally "soured" on everybody? When at last he has reached the limit of human endurance, when his patience breaks and in bitter resentment he in turn commits some rash act there will be those who will say, "Aha! a chip off the old block. Blood will tell. You couldn't expect anything

better of him." Nobody stops to realize that this splendid house-mother, so careful of her children's comforts, their clothes, their food and their evening prayers, had goaded poor Johnny by her careless speech to a life of antagonistic resentment leading directly to this crime.

In the home and in the school, parents, teachers and friends are very careless about their remarks in the presence of children. The child mind is very plastic and very sensitive. Impressions are made at this age which are never effaced, and their causes may seem to the adult as being very insignificant. Success in life, or failure, is probably determined in most cases during the first years of childhood. As with a tree in the orchard, the buds which will later become limbs, show themselves very early. The shape of the tree may be later modified by pruning these limbs, but the first year's pruning is the most important of all. Habits of later life may be modified by an effort of the will—but as the twig is bent, so the tree is inclined, and as the child is taught so the man will be. With the small tree in the orchard, the first year's pruning is mostly done with the fingers by gently rubbing off the undesirable buds and forcing the buds to start in the direction where limbs will be desired to make a well balanced tree. At this age no scar is left and no damage done. The same is literally and absolutely true with children.

To turn loose in a young orchard a child, or a man, who knows absolutely nothing of the principles governing the growth of trees, and give him autocratic authority to plant and prune as suits his own caprice, would not be expected to develop a model orchard.

To turn loose in the world a young man and a young woman who have not had even the most elementary instruction in the fundamental principles governing the growth and development of children, and give them autocratic authority to feed and prune the helpless children coming to them as suits their own caprice and fancy, can hardly be expected to develop a generation to its fullest right and capacity.

If the curriculum in our higher grades, high schools and colleges included a sensible course in child husbandry as it includes animal husbandry, agriculture, arts and sciences, the state would, with coming generations reap the reward of better parents and better children. Better trained children would mean greater advances in every phase of civilization. There would be less law violation and less loss by crime. Better children would demand, and would have, better homes, better farms, better roads, better schools, and community life would be more harmonious.

This fundamental fact was recognized many centuries ago, as is proven by the allegorical statement, "seek ye first the kingdom of God and all these things will be added."

The cause of the "problem child" in school may almost invariably be traced to an unsuspected source, usually some home environment, and often some event in very early childhood.

As our house-mother and her friend passed on they spied little four year-old Bessie. Her luxuriant hair was curly and golden, her eyes

blue, and her face smooth and fair. A perfect little doll. Here the house-mother remarked, "and this is little Bessie, a most beautiful child, but she already knows it and is quite vain." Of course Bessie knew she was pretty. As she heard it then so she had heard it many times before, so often indeed that she had come to believe it was true. When Bessie grows to college age and is accused of being a vain little egotistical flirt, who is going to be responsible for it?

We speak of these events as occurring in an institution, but are they not occurring also in the homes and schools on every hand? Now that your attention is called to it, you will notice how carelessly we talk in front of the children.

If the present generation have not had the advantage of a sensible study in school of Child Husbandry, and although they have been compelled to undertake the most vitally important task that can come to any human being—that of being a parent, without training in this profession, we can at least be polite and considerate of child sensibilities.

One of the most successful men in the whole country in the matter of handling mental patients and the head of one of the largest hospitals for such patients is just as courteous to them and as considerate of their sensibilities as he would be in any group of individuals of whatever status in life.

If being courteous to mental patients has brought him success, the same courtesy will yield even more abundant success in handling children.

MOTHER LOVE MAY DEFEAT ITS OWN PURPOSE

Interest and love alone on the part of the mother are not enough to insure success in handling the innumerable problems met with in the management of children, says Dr. Douglas A. Thom in *Child Management*, a recent publication of the Children's Bureau.

The very love of the mother for her child may be the "stumbling block" that prevents her from suc-

cessfully fulfilling the obligations of her parenthood. This love is invariably associated with excessive worry, anxiety, and at times, definite fear which prevent the most intelligent approach to many problems of childhood.

Over-solicitude on the part of the parent or parents may put the child in an entirely new setting. Children may become self-centered and de-

velop innumerable imaginary complaints simply because illness is looked for and any existing ill health is exaggerated.

The study of one little girl seen a short time ago demonstrates this point clearly:

Mary, at seven, dominated the entire household. Mother faithfully fulfilled her slightest wish, fearing to cross her lest she become ill. Her sisters patiently shouldered her share of home duties and quietly gave way to her at every point in order to avoid, if possible, the almost inevitable outburst of temper which was so upsetting to the household. Her ready excuses for all occasions were "You mustn't mind what I do; you see I've been sick," or "I'm not strong enough to do that 'cause I've had paralysis."

It is true she had lived through more than her share of illness, and was accustomed to admiration and interest from doctors to whom she was frequently shown as an unusual case.

Her "alibi" of ill health helped her over many difficult places in school, and at home special concessions were made for her, and she was excused at every turn. Her whole life seemed

built about this desire to hold the center of the stage.

Through a radical change of attitude on the mother's part this little girl, who was fast developing into a chronic complainer, has now become a hearty, normal youngster, gayly competing with her sisters in "helping mother," trying each week to learn to do one new task independently, and striving toward an ideal of robust good health rather than desiring the rôle in life of "interesting invalid."

After a little judicious neglect and ignoring, the alarming physical symptoms which so greatly troubled the mother vanished. The marked tremor of Mary's hands, which made it seem necessary that the mother feed her each mouthful she ate, disappeared, as also did the tremor of voice. After determination by physical examination of the child's condition an appeal was made to her ambition and pride. Her desire for attention and wish to excel were turned away from the goal of ill health. With encouragement on the part of the physician and her mother, and with faith in her ability to make good, she is now taking part in home and school, standing on her own feet, and learning to face life as it is.

CIVILIAN VOCATIONAL REHABILITATION ORTHOPEDIC CLINICS

H. L. STANTON, State Supervisor

Nearly a thousand cripples have been examined by orthopaedic surgeons during the past six months at the eight permanent orthopaedic clinics organized throughout the State by the Department of Vocational Rehabilitation. Hundreds have been treated in these clinics by application of plaster casts, braces, and orthopaedic shoes, and by corrective exercises, while many others have had their deformities corrected by operations in free beds donated by hospitals and civic organizations. These accomplishments have been at-

tained, with only one clinic in operation for the full six months, and the majority operating three months or less.

From the above some slight conception of the meaning of these clinics to the physically handicapped portion of our population may be had. A very conservative estimate of the cripples in the State has placed the number of cripples at 12,500. There is no way by which we can measure the suffering and heart-breaks that will be relieved by the treatment and correction of the de-

formities of this portion of our citizenry. Vocational training for the physically handicapped, as provided through the Rehabilitation Department, has already proven to be a sound economic investment for the State and nation. To correct the deformities of the cripples, which is a very effective form of rehabilitation, is certain to increase the earning power of many of these unfortunate

Instruction, a plan of organizing and conducting permanent monthly clinics was devised and submitted to the orthopaedic surgeons of the State at a meeting held in Greensboro on the thirteenth of last August. This plan of organization, as well as a plan of districting the State for the purpose of holding clinics was unanimously adopted by the surgeons at the meeting.



Correcting club foot by application of plaster cast at the Wilson Clinic

people, to say nothing of the resultant relief to the relatives and communities on which they would otherwise be dependent.

Plan of Organization

To meet the need of orthopaedic treatment for indigent cripples over sixteen years of age as found by the Vocational Rehabilitation Service, under the State Department of Public

The plan of organization is as follows:

I. Purpose of clinics:

(a) To enable the Department of Vocational Rehabilitation to form contact with all of the physically disabled and vocationally handicapped residents of the State.

(b) To make available free orthopaedic treatment to all disabled residents of the State of sound mind who are unable to pay for same.

II. The Department of Vocational Rehabilitation purposes to establish in the State at necessary and available points in the most economical way permanent orthopaedic clinics.

The following plan of establishing and operating these clinics has been determined upon:

1. To divide the State into seven zones; to assign a zone to each of the orthopaedic surgeons practicing

clinics in his zone, under the limitations and provisions of this plan. If the clinician in charge is unable to attend a clinic he shall notify the Supervisor of Vocational Rehabilitation, who shall designate another orthopaedist to hold such clinic.

The plan of zones being presented at this time has been evolved by the rehabilitation staff on a basis of the following considerations:



He had never known what it was to walk on the bottom of his feet until recently furnished braces at the Reidsville Clinic

in the State and to establish at least one clinic in each zone to be conducted by the orthopaedist to whom the zone is assigned. If for any reason one or more of the orthopaedic surgeons practicing in the State does not desire to participate in this work under the plan herein provided, then the zone assigned to him will be divided between the others participating. The orthopaedist assigned to a zone shall have full control of the

(a) Location of each orthopaedist and the field being served by him at the present time.

(b) The territory most accessible to the points where it seems advisable to establish clinics.

(c) The time of the orthopaedist available for conducting clinics.

1. The Rehabilitation Department wishes to have it understood by all agencies that will cooperate in the establishing and conducting of the

proposed clinics that the present zones are tentative, and if experience indicates necessity for change, such changes may be effected by agreement of the Department of Rehabilitation and the orthopaedists affected.

2. To send a representative to each zone to organize clinics at points to be determined by the Department of Rehabilitation and the orthopaedist in charge, as soon as accommodations can be secured through local agencies for hospitalizing cases examined at such clinics who are unable to pay hospital expenses.

All cases recommended by the Department or by local physicians will be examined free at these clinics, and indigent cases only will receive free treatment by the surgeon in charge of the zone. Indigent is to be defined as applying to all persons who can pay none, only a part, or all of their hospital expenses, not including doctor's fees.

Clinics will be established only at points where some local organization will sponsor same and meet the necessary expenses, including equipment, bandages, orthopaedists' expenses, while attending clinic, etc. For the initial examination of each rehabilitation case, the clinician making such examination will be paid the established fee by the State Board for Vocational Education. The Department will determine which are rehabilitation cases. All such fees are to be counted against the expenses of the orthopaedist to all clinics held at the place of examination.

3. Report of cases examined at clinics shall be uniform on blanks furnished by the Department of Rehabilitation. These reports are to be made in triplicate; one copy sent to the Department of Rehabilitation, one retained by the clinician and one filed with the local organization sponsoring the clinic. The orthopaedist will keep the Department advised as to the treatment of all indigent cases.

Location of Clinics

Wherever possible the clinics are carried on in connection with the work of the County Health Depart-

ment. They are sponsored and supported by various civic organizations. Much valuable assistance in the organization and operation of the clinics has been rendered by County Welfare Departments.

Monthly clinics are being held in the following cities at the places designated on the day mentioned, and are supported by the civic organization named. They are listed in the order in which they were organized:

Fayetteville—County Health Department, last Saturday, Kiwanis Club.

North Wilkesboro—Commercial Club Rooms, 2nd Saturday, Kiwanis Club.

Charlotte—City and County Health Departments, 1st Saturday, Rotary Club.

Wilson—County Health and Welfare Departments, 1st Friday, Lions Club.

Sanford—Baptist Church, 3rd Friday, Rotary Club.

Waynesville—Methodist Church, 4th Saturday, Rotary Club.

Winston-Salem—County Health and Welfare Departments, 3rd Saturday, Kiwanis Club.

Reidsville—American Legion Hall, 4th Friday, Kiwanis Club.

A new clinic will be opened in New Bern at the County Health Department under the auspices of the Rotary Club on April third and will be held on the first Saturday of each month thereafter.

Rehabilitation cases from these clinics requiring operations are placed in free hospital beds furnished by the following organizations to serve the zones indicated:

Mission Hospital at Asheville—bed for Zone No. 1.

Rotary Club of Winston-Salem—bed for Zone No. 2.

Mercy Hospital at Charlotte—two beds, for Zones Nos. 3 and 5.

Kiwanis Club of Greensboro—bed for Zone No. 4.

Kiwanis Club of Raleigh—bed for Zone No. 6.

Orthopaedic Zones

The districting of the state for the purpose of holding clinics is as follows.

Zone No. 1: Cherokee, Clay, Graham, Macon, Swain, Jackson, Haywood, Transylvania, Madison, Buncombe, Henderson, Yancey, Mitchell, McDowell, Avery and Burke Counties; assigned to Dr. Edward King of Asheville.

Zone No. 2: Ashe, Watauga, Caldwell, Alexander, Wilkes, Alleghany, Surry, Yadkin, Stokes, Davie, Forsyth and Davidson Counties; assigned to Dr. Robert A. Moore of Winston-Salem.

Zone No. 3: Rutherford, Polk, Cleveland, Catawba, Lincoln and Gaston Counties; assigned to Dr. J. C. Gaul of Charlotte.

Zone No. 4: Rockingham, Guilford, Randolph, Moore, Lee, Chat-ham, Alamance, Caswell, Person, Orange and Durham Counties; assigned to Dr. Walter Cole of Greensboro.

Zone No. 5: Mecklenburg, Union, Cabarrus, Stanly, Anson, Montgomery, Richmond, Scotland, Hoke, Harnett, Robeson, Cumberland, Sampson, Bladen, Columbus, Pender, Brunswick, and New Hanover Counties; assigned to Dr. Alonzo Myers of Charlotte.

Zone No. 6: Wake, Granville, Vance, Warren, Franklin, Johnston, Nash, Halifax, Northampton, Edgecombe, Wilson, Wayne, Duplin, Lenoir, Greene, Pitt, Martin, Washington, Tyrrell, Dare, Beaufort, Hyde, Craven, Pamlico, Jones, Onslow and Carteret Counties; assigned to Dr. Hugh Thompson of Raleigh.

Zone No. 7: Hertford, Bertie, Gates, Chowan, Perquimans, Pasquotank, Camden and Currituck Counties; assigned to Dr. Foy Vann of Norfolk, Va.

Outstanding Advantages

A few of the outstanding advantages to be derived from these clinics are:

1. They acquaint people with the possibilities offered by orthopaedic treatment.

2. They place skilled orthopaedic treatment within the reach of everyone.

3. Where the correction can be made without operation the cost of treatment in the clinic is practically nil as compared with the cost of hospital treatment, and furthermore the patient does not have to be separated from his family.

4. Regular, frequent follow-up can be made to see that no reversion occurs.

HEREDITY AND ENVIRONMENT FROM THE MEDICAL VIEWPOINT*

By LEWELLYS F. BARKER, M.D., Baltimore, Md.

Though we are admonished to avoid in ordinary conversation the talking of "shop," I am convinced that on occasions of this kind a speaker cannot do better than to talk regarding his own particular "shop." For if he can interest an audience at all, he will do so by discussing some of the problems that are constantly confronting him in his own work,

about which he thinks much and feels deeply. My own life, as some of you know, has been devoted in the main to the teaching and practice of medicine. In this work, one is compelled to consider daily the bodies and minds of human beings of different ages. He has to investigate carefully the structure and functions of these bodies and minds in order to discover in what way, if any, they deviate from what we call the "normal." When abnormalities are found,

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he must attempt to bring about readjustments that are the best possible in the circumstances. In the prosecution of such work, the conscientious medical practitioner strives to determine in each case the relative significance of constitutional make-up on the one hand, and of environmental influences upon the other.

Compelled to study a great variety of persons, the medical man becomes intensely interested in all the problems that bear upon the development of the human individual. Confronted in his consulting room by a given person who seeks his help, he is fascinated by the problem of discriminating between the factors of inheritance and the factors in the surroundings of what is inherited, for upon the interaction of these, he believes, the genesis of the realized person before him must have depended. In other words, to understand the people whom he is trying to help he must inquire into both their "nature" and their "nurture," for only through such inquiry can a just appreciation of the form and behavior of a given person be gained. You will understand, then, why I have chosen as a topic upon which to speak to you tonight, "The Influence of Heredity and Environment on Man from the Medical Viewpoint."

External and Internal Factors and Disease

Those who are acquainted with the history of medicine know that the interest of medical men in their studies of the origin of disease has at certain periods been directed more to external causes and at other periods more to internal causes. At times, it has been the environment of men changing their condition that has attracted especial attention. At other times it has been the hereditary make-up of patients, their "constitutions," that has been the object of special research. The pendulum has swung to and fro, the swing corresponding as a rule to changes of direction in general biological research. The better medical practi-

tions, however, especially those of a philosophical turn, have kept ever in mind the two sets of factors, hereditary and environmental, even though temporarily they have directed their researches more in one direction than in the other. In general, they have looked for what they call the "exciting" causes of diseases in influences arising outside their patients, and for what they call the "predisposing" causes of diseases in influences residing within the patients themselves, the latter in turn depending partly upon inherited tendencies, partly upon environmental influences exerted earlier in life. Thus, sometimes, too much attention has been paid to predisposition to disease, at other times too little. A notable example may be seen in the history of the discovery of the skin disease known as scabies or what is ordinarily called "the itch." Although the itch insect had been known for a long time and one medical man had already produced the disease experimentally in one of his friends by placing the itch insect upon him, it was not until more than fifty years later that the medical profession could be convinced that itch was due to a parasitic invasion from without, for physicians held fast to the belief that itch depended upon a peculiar disturbance of the humors of the body that they spoke of as the "itch dyscrasia." At about the same time, it was found that a certain disease of the scalp known as *furunculosis* was due to infection from without by a peculiar fungus. It is interesting that it was students of diseases of the skin who first discovered that animal and vegetable parasites from the surroundings could be the cause of disease in man. A half century later, through the rise of modern bacteriology and protozoology it was found that a host of human diseases are due to infection from without by minute vegetable microorganisms (micrococci, bacilli) or to invasion from without by microscopic animal parasites (such as the parasites of malaria, the trypanosomes of sleeping sickness, or the spirochetes of syphilis).

Emphasis on External Factors

During the last half century, medical research has quite naturally been predominantly directed toward these external causes of disease, to the discovery of animal and vegetable parasites, and to those harmful influences in man's surroundings that lower his resistance to bacterial infection and to parasitic invasion. Investigators have found the germs that cause sepsis, typhoid fever, dysentery, tuberculosis, syphilis, leprosy, diphtheria, pneumonia, malaria and a host of other diseases. They have found how the germs enter the organism, some of them through contaminated food, some through polluted water, some through abrasions of the skin or mucous membranes, some through the bites of insects. As a result of such discoveries, it is now possible in large measure, to prevent the occurrence of many of these diseases. Typhoid fever is disappearing as cities and towns are making provision for supplies of pure water. The prevention of yellow fever by an anti-mosquito campaign permitted the digging of the Panama Canal. Human health and efficiency are being promoted in the Southern states and in Porto Rico by the prevention of hookworm invasion. The ravages of syphilis are being averted partly by education regarding prevention, partly by killing the spirochetes that cause it by injecting salvarsan into the blood or the cerebrospinal fluid of the infected. Obviously, medical research and medical practice have scored noteworthy triumphs as a result of the attention paid to these environmental causes of disease.

Emphasis on Internal Factors

But the success attendant upon these studies of disease-causing influences in the environment temporarily distracted attention, perhaps unduly, from the internal factors that play a rôle in favoring or preventing the development of disease processes. It was not long, however, before investigators were compelled to return to the study also of manifest differences in susceptibility to attack by

various external agents and of the obvious variability in rapidity and completeness of recovery exhibited by different persons. Why does one child exposed to diphtheria sicken and another remain well? Why does John Doe, though a moderate drinker, develop hardening of the liver, while Richard Roe, who drinks three times as much escapes? Why do several brothers and sisters in one family develop tuberculosis of the lungs while those of a neighboring family, even with poorer food and greater hardship, are immune from it? Why are there many suicides in one family and none in another? Why of two sleepers in the same bed room is one bitten badly by mosquitoes, or by bed-bugs, while his fellow is less disturbed? Obviously there are great differences in the "insides" of the persons upon which external agents act. Physicians are forced therefore to take into account what they call "differences in disposition to disease" and to try to determine in how far disposition is inherited and in how far it is acquired. Human beings resemble one another but each differs from every other. Each person is unique. How does a given person, so like others and yet so different from others, come to be what he is?

The Development of a Human Individual

Biologists, busy during the last century under Darwin's leadership with the investigation of the origin of species and with considerations of the doctrine of evolution, have in our time turned their attention more particularly to the study of the origin of individuals, engaging actively in observation and experiment bearing upon the phenomena of inheritance and development. Just a century ago, two men who were destined to revolutionize our ideas of heredity were born in the same year. One of them, Gregor Mendel, an Austrian monk of humble origin, worked in the garden of his cloister on the effects of hybridization of peas. The other, Francis Galton, a scion of an aristocratic English family, explored

wild countries, studied meteorology, anthropology and psychology, applied mathematical methods to biological problems, became tremendously interested in the relations of heredity to genius and to crime, and foresaw "possibilities of the improvement of human stocks under present conditions of law and sentiment," thus originating the modern eugenic movement, which attempts to get people "well-born." During the past few decades, great progress has been made in our knowledge of the development of individuals through (1) the experimental breeding of plants and animals, (2) the study of germ-cells, of the process of fertilization, and of the growth and differentiation of young organisms by cytologists and embryologists, and (3) the application of mathematical methods to the determination of relations among the phenomena under study. A useful epitome of the results of the studies is to be found in Professor Conklin's admirable volume "Heredity and Environment in the Development of Men." I can recommend its perusal by laymen since it is written in language that is simple and clear.

Knowledge has been so far advanced that we can safely assert that human beings develop according to laws that are essentially the same as those that hold for inheritance and differentiation among plants and animals. Man, like the chicken or the rabbit, begins through the union of two sex-cells, an egg-cell (ovum) from the mother and a fertilizing cell (spermatozoon) from the father. These two cells, fused to form a single cell, start a new individual, which in a suitable environment, subdivides into two cells, then into four, and then gradually into many millions of cells. This new individual develops stage by stage, first as an embryo within the mother's womb, later as a child within the home, still later as a boy or girl in the school, and finally reaches adulthood, entering into manifold relationships with the larger world of society. In these successive stages of human development and differentiation, we have to deal with two sets of factors (1)

those of the germ plasm derived from the father and mother (factors of heredity), and (2) those of the surroundings of the developing being (factors of environment). The factors of heredity offer certain possibilities of development (and no others); among these possibilities of development, those actually come to fruition that are brought there through the influences of the factors of the environment (physical, chemical, psychical and social). As the medical man sees his patient, he looks upon him as the resultant of a long series of interactions between an ever-changing environment, on the one hand, and an organism that begins as a fusion of two germ cells and gradually becomes an adult person, on the other. The heredity of the patient has determined the possibilities of his development; the surroundings during development have been decisive as to the *possibilities* that have attained to *realization*. The physician believes that a super-scientist who could know all the details of the factors of inheritance and all the details of the factors of environment, as well as what would happen when the internal and external factors react with one another, would be able to predict the form and functions of a given individual, and could account accurately for his knowing, his feeling and his striving; in other words, he could explain his intellect and his character, and could prophecy what his behavior would be in a given set of circumstances.

Internal Secretion, and Human Development

An interesting example of the way in which our newer knowledge of the genesis of the human individual is throwing light upon the forms and functions of the patients that a physician sees is to be met with in the domain of the internal secretions. It is now known that there are certain glands in the body, which are known as endocrine organs, and whose functions are of the first importance, not only for changes in the structure of the body during its development, but also for the way in which the func-

tions of the body are performed during every-day life. Among these glands are the thyroid, the pituitary, the suprarenal, the pancreas, and the sex glands. The stature of a person, his weight, the texture of his skin, the distribution of the hairs on his body, the shape of his bones, the frequency of his heart beat and the energy manifested in his activities, seem to a large extent to be dependent upon the effects of the chemical substances produced by these glands. Thus, a person who, during development, has had an over-active pituitary gland, may become a giant, whereas one who has had an under-active pituitary gland, may become a short, fat individual with imperfect sex organs. Again, should the thyroid become markedly over-active, the patient's eyeballs will protrude; his heart will beat, say 120 times per minute instead of 70 times; his fingers will tremble; he will sweat profusely and he will lose weight rapidly; whereas should the thyroid become markedly under-active, he will grow fat and stupid, his skin will become thick and wrinkled, and his hair will fall out. Or, still again, if the internal secretions of the pancreas fail to be produced, the patient will be a diabetic, large quantities of sugar will appear in his urine, and he will complain of an intolerable thirst. The patient with over-active thyroid gland will often be much benefited by surgical removal of a part of that gland, whereas the patient with too little thyroid activity can often be benefited by feeding him the dried thyroid gland of the sheep. Severe diabetic patients who do not respond to treatment by diet alone can today be made to utilize sugar by injecting under the skin a substance called insulin, which is the internal secretion of the pancreas derived from animal tissues.

Euthenics

If the human individual is the direct resultant of the interaction of factors of heredity with factors of environment, it is clear that in the treatment of a given patient the

physician, in making use of remedial measures, is limited to the application of favorable environmental influences. For if the patient's heredity cannot be altered, all that the physician can do is to bring to bear upon the "realized person" influences from the outside that will be of benefit to him. Through the use of physical, chemical, psychical and social influences, he must do his best to change the patient so that his body and mind may make better adaptations to the situations in which he finds himself. Thus physicians make use of diet, of rest, of exercise, of baths, of drugs, of occupation, and of psychical and social influences in their efforts to restore their patients to what is called health. The science that deals with the improvement of environmental influences for the welfare of man has been called euthenics.

Eugenics

Though the human beings already born have their heredity unalterably fixed, the factors of inheritance of those that are to be born will be determined by the character of the germ plasms that fuse at their start. The question then arises, in how far is it possible to realize the vision of Francis Galton, who foresaw an improvement in hereditary stocks through education, and perhaps legislation, influencing and partly controlling germ-plasm fusion? This eugenic problem is one of the most difficult and perplexing of the many problems that confront our race. Our experience with certain physical diseases, with insanity, with mental deficiency and with crime, convinces us of the significance and dangers of the transmission of inferior germ plasms, in other words, of hereditary factors that are faulty. It has even been suggested as possible that the activities of doctors and of our great public health agencies, in prolonging the lives of the weak and the biologically unfit, are contributing to the deterioration of our race by permitting an increase of transmission to succeeding generations of inherited qualities that are inferior. Can any-

thing be done in the way of arranging for the greater encouragement of parenthood by the more fit, for the discouragement of parenthood by the less fit, and for the prohibition of parenthood by the notoriously unfit, while we, at the same time, prolong the lives of the biologically less fit and of the wholly unfit through environmental improvement? Unless something definite can be accomplished in this direction is it not possible that the inborn capacities of man may undergo progressive deterioration and contribute to ultimate race extinction? Now that we are becoming familiar with Nature's laws, can we not learn how better to coöperate with nature and improve our race rather than do injury to it? But we shall accomplish more, I feel sure, by education than by any premature legislation.

We can see the problems, but their solution will not be an easy matter. Certainly as yet it would be a brave man who would decide in every case regarding the fitness to survive, even though he might be in no doubt as to a decision that certain manifestly unfit persons should be denied the privilege of parenthood. The world needs many varieties and degrees of inborn capacities in its human individuals. It is conceivable that the breeding of people who were nearly alike, even if superior in type, might be less advantageous to human society as a whole than the breeding of races in which hereditary capacities exist in greater varieties than those now existent. Students of human nature have differed in their opinions as to its alterability, either by conscious control of heredity, or by educational or institutional changes. There are optimists who believe in the infinite perfectibility of mankind. There are pessimists, as you know, who assert the practical unalterability of human nature.

The medical mind with a knowledge of evolution (as studied by the biologists), and of human customs and institutions (as studied by the sociologists) is inclined to believe in

the idea of the possibility of progress notwithstanding the fact that this idea has been challenged by some of the world's greatest thinkers. For, despite the fact that hereditary transmission by germ plasms is similar in man to that in other animals, there is a marked difference in the traits that exist at birth. In man the mental equipment is less definite, less fixed, more vague and more plastic than in animals. The chick when hatched can feed itself, can run about, and very quickly become independent of the mother hen. The human infant cannot walk until it is about a year old, and requires many years of teaching to secure an independent living. The plasticity of the ability, makes possible the greater variety of adaptation of his later life. If, in the processes of evolution, human heredity has already reached a stage of advantage so far in advance of that in animals, is it not possible that many aeons hence there may be a great gap of advantage between the hereditary qualities of the child of that future and those of the child of today?

Or, even if hereditary qualities should in the future undergo but little change, is it not possible that human habits, human customs and institutions may become so altered, prevailing types of thought and desire become so changed, that human life as a whole may become fuller, richer and more beautiful than it is today? I myself am one of those who still harbor the idea of progress. I cherish the hope that, gradually, great reforms will be brought about through the extension of our knowledge of the possibilities of human intercourse, through the steady devising of new social inventions, and through the study of, and persistent experiment in, social engineering. Some time in the far distant future our race may discover even what William James visualized, the moral equivalents of war. Sometime, too, human beings may work out some satisfactory substitute for the faulty economic regime that now exists.

Dreams as these are yet their realization would not be less astounding than the actual fulfillments that we have seen in our times of the visions of dreamers of the past. But if in the future there ever come to realization the visions of the seers of today, it will be through a long accumulation of new knowledge obtained by application of the methods that scientific

investigators have taught us to employ. And, from the physician's viewpoint, it would seem probable that the greatest progress in human welfare in the future will depend upon the discoveries to be made in the mechanisms of human inheritance and in the interactions between developing human beings and their environment.

WAGING WAR ON ANTS AND COCKROACHES

By W. B. HERMS

(Reprinted from *Hygeia*, March 1926.

The better acquainted one is with the life of insects, the better able one will be to control them if it becomes necessary to do so. When the home is invaded, when persons are attacked and when foods on the table and in the pantry are sought out by the invaders, there is not only annoyance, but alarm. One wonders where they come from, and what else besides good wholesome human food they tread on. The result of such an investigation may reveal a grave situation. These selfsame invaders may tread and feed on dangerous human excreta or sputum; then, without sanitary precautions, they may proceed to scurry into the pantry and on the table. Ants and cockroaches at once come to mind as gross offenders against the laws of public health.

I. Ants

There are approximately 3,500 species of ants. No other social insect, and it is this feature of ant life that impresses us most forcibly, has so successfully reached a dominating position of world-wide distribution. Ants display a marked adaptability in their nesting habits, making it easy for them to change homes under stress of environment. Frequently the lines of an ant colony may be seen traveling across country, each ant bearing its burden of an egg, larva or pupa; in short, the entire

household is being moved to a more favorable abode.

The fact that ants are not particularly restricted in diet makes it easy for them to gain a foothold and to maintain a livelihood, even under apparently meager food conditions. Their fondness for the sugary secretions and excretions of other insects, such as mealy bugs and plant lice, presents a problem of some importance in ways other than domestic or sanitary.

With its adaptability in food and nesting habits, the ant combines a native energy and ever-busy disposition, which give it a decided advantage over most other insects.

Peculiarities of Ants

Ants exhibit interesting differences in size and function. The queens are usually much larger than the other members of the colony and, like the males, which are also large in size, are usually provided with wings during a short period of their lives, when the marriage flight takes place. The workers of the colony are the almost numberless smaller individuals that one sees swarming over the face of the earth on foraging expeditions. Certain sturdy Amazonian forms, provided with huge jaws set in a correspondingly large head, generally remain near or in the nest as defenders and for other purposes for which strong jaws are needed.

The jaws of ants are useful instruments. They are used for digging in the ground or even in wood, for carrying burdens, for fighting, and to a certain extent for crushing solid food to extract the juice. Solid food is not suited to the mouth structure of ants, unless it is in extremely fine particles. The larvæ, on the other hand, which are grublike, may be fed more or less solid food; this is brought to them by their nurses. The queens are also fed in a similar manner. This is a reason why a poison that acts more slowly, allowing the workers to carry it to the queens and larvæ, is likely to give better results in the long run, although its immediate action is not so spectacular.

Of the two dozen or more species of ants more or less regularly infesting houses on this continent, practically all are of tropical origin. Among the several species of tiny ants invading the pantry is Pharaoh's ant, or the little red ant. Then there is the very large, almost black native carpenter ant nearly one-half inch in length; it may invade the house and almost literally run away with a pan of doughnuts. Between these two extremes in size are the numerous common house invaders—just the plain ants.

Means of Exterminating Ants

One species of these moderate sized ants is the Argentine ant, a comparatively recent introduction from South America into Louisiana, thence to California, and spreading where climatic conditions are fairly tolerant. This species of ant is without question a serious foe not only to householders, but also to fruit growers, since it is a strong ally of the dangerous mealy bug of the orchard and vine.

The presence of foraging ants in the house is the sign for action. They have been guided by their keen sense of smell to food, and before one knows it scouts have returned to the nest and a line has been established. Scraps of meat, crumbs of

cake, bread, sugar and the like left on the shelves, in the sink or in other open places will certainly soon attract ants.

Cleanliness is essential to ant control; these busy creatures find food particles that only a vacuum cleaner or hot, soapy water with elbow action will remove. The dusting of ant powders in crevices around the pantry and across the trails will generally act at least as a repellent. The most effective ant powders contain sodium fluoride as the principal ingredient.

House-invading ants can usually be traced to their colonies outdoors in the lawn, dooryard or under the house. Frequently much good can be accomplished simply by drenching the nest with boiling water or kerosene. The distribution of ant poison in cans and other receptacles in the yard and around the foundation of the house must be done with some caution, because of the danger to young children and pets.

Sodium arsenite is the poisonous element usually used in ant syrups. The Department of Agriculture recommends the following formula:

Granulated sugar	—1 pound
Water	-----1 pint
Sodium arsenite	-125 grains
Concentrated lye	—1 ounce

The mixture should be boiled and strained, and on cooling used with sponges in perforated cans. The addition of a small amount of honey is said to add to this mixture's attractiveness to ants. Naturally the greatest precautions should be taken in preparing this syrup and in safeguarding it afterward, to prevent its being the cause of poisoning to human beings or domestic animals.

A related formula experimentally worked out for the Argentine ant is given in a Department of Agriculture special bulletin on this insect:

Granulated sugar	—12 pounds
Water	-----11 pints
Tartaric acid (crystallized)	
	¼ ounce
Sodium benzoate	-----⅓ ounce

These ingredients should be boiled together slowly for thirty minutes and the mixture allowed to cool. Three-fourths ounce of sodium arsenite should then be slowly dissolved in one-half pint of hot water. This should be allowed to cool and added to the syrup, stirring it thoroughly. By adding 2 pounds of pure honey to the syrup, the mixture is ready for use.

II. Cockroaches

Cockroaches rank among the larger insect inhabitants of the earth, some of them reaching a body length of nearly two inches, exclusive of their long, slender feelers. Their bodies are greatly flattened and are a smooth, shining, chestnut brown to black. Although most roaches have fairly well developed wings, they are typically running insects, scurrying hither and thither under cover of darkness, for they are night prowlers, hiding away in dark crevices during the day. Thus old, ill-kept, dark houses, with warm kitchens and pantries in winter, are most commonly invaded by the cockroach.

This insect, of which there are four or five house-inhabiting species in this country, especially the small German cockroach or croton bug, is particularly disgusting for two reasons: (1) because of the indescribably offensive roachy odor that it lays down on everything with which it comes in contact, and (2) because of its indiscriminate and dangerous feeding habits. Roaches have biting mouth parts like those of grasshoppers, and consequently actually nibble their food bit by bit. They are particularly fond of sweet and starchy matter. Their fondness for starchy substances leads them to do considerable damage at times in loosening hat bands, shoe linings and book bindings.

The female cockroach carries around with her a dark brown, pod-like structure, which protrudes conspicuously from the tip of her abdomen. This is the egg case. When the eggs are about ready to hatch, the egg case is deposited in some

warm, dark crevice, and soon the little roaches emerge. They are at first wingless; but gradually, after molting their skins from five to seven times, they reach the winged state and mature size.

Sunlight is Roach's Enemy

To control the cockroach, one must bear in mind that daylight is its greatest enemy. One should do away with old-fashioned sink cupboards. Open clean spaces in which sunlight or at least broad daylight may freely enter will never harbor cockroaches.

One of the most effective simple means of ridding the premises of roaches is dusting with commercial sodium fluoride, either pure or diluted one-half with some inert substance, such as powdered gypsum or flour. With the use of some dust gun or blower, the sodium fluoride can be thoroughly dusted over the shelves, tables, floors and the runways and hiding places.

The immediate effect is to cause these insects to come out of their retreats and to rush about more or less blindly, showing evidence of discomfort. This is followed in the course of a few hours by death. The dead or paralyzed roaches can be swept up and burned, and complete extermination is effected within twenty-four hours. It is not definitely known whether the sodium fluoride acts as a contact insecticide through the breathing pores or as a stomach poison. Probably it acts in both ways.

Powdered borax also enters into the composition of many of the so-called roach powders. This substance may be used either pure, as a poison or repellent, or mixed with some other substance to render it attractive to the insects. Several correspondents have reported great success from the use of a mixture consisting of one part of powdered borax to three parts of finely pulverized chocolate, this mixture to be freely sprinkled about the infested premises.

THE HOUSE FLY AND HOW TO SUPPRESS IT

By L. O. HOWARD, Chief of the Bureau of Entomology, and
F. C. BISHOPP, Entomologist

(U. S. Department of Agriculture—Farmer's Bulletin No. 1408, adapted)

Kinds of Flies Found in Houses

Several species of flies are found commonly in houses. Some of them so closely resemble the true house fly that it requires very careful observation to distinguish them from it.

One of these is the biting stable fly. It occurs frequently in houses and differs from the house fly in the important particular that its mouth parts are formed for piercing the skin. This fly is so often mistaken for the house fly that most people think that the house fly can bite.

Another frequent visitant of houses particularly in the spring and fall, is the cluster fly. It is somewhat larger than the house fly, and is distinguished by its covering of fine yellowish hairs. Occasionally this fly occurs in houses in such numbers as to cause great annoyance. It gets its name of "cluster fly" from its habit of collecting in compact groups or clusters in protected corners during cold periods.

Several species of metallic greenish or bluish flies also are found occasionally in houses. These include a blue-bottle fly, the black blowflies, and the green-bottle flies. They breed in decaying animal matter.

There is still another species, smaller than any of those so far mentioned, which is sometimes called the "lesser house fly." This insect is distinguished from the ordinary house fly by its paler and more pointed body. The male, which is commoner than the female, has large pale patches at the base of the abdomen, which are translucent when the fly is seen on the window pane. These little flies are not the young of the larger flies. Flies do not grow after the wings have once expanded and dried.

In late summer and autumn many specimens of a small fruit fly, known as the "vinegar fly," make their appearance, attracted by the odor of overripe fruit.

All of these species, however, are greatly dwarfed in numbers by the common house fly. In 1900 the senior author made collections of the flies in dining rooms in different parts of the country, and found that the true house fly made up 98.8 per cent of the whole number captured. The remainder comprised various species, including those mentioned above.

Where the True House Fly Lays its Eggs

The true house fly, which is found in nearly all parts of the world, is a medium-sized fly with four black stripes on the back and a sharp elbow in one of the veins of the wings. The house fly cannot bite, its mouth parts being spread out at the tip for sucking up liquid substances.

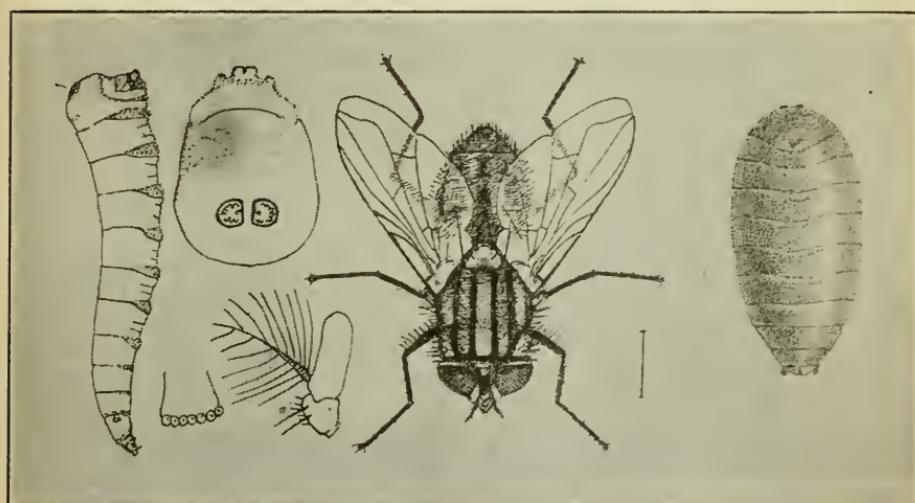
The eggs are laid upon horse manure. This substance seems to be its favorite larval food. It will breed also in human excrement, and because of this habit it is very dangerous to the health of human beings, carrying as it does the germs of intestinal diseases, such as typhoid fever and cholera, from the excreta to food supplies. It has also been found to breed freely in hog manure, in considerable numbers in chicken dung, and to some extent in cow manure. Indeed, it will lay its eggs on a great variety of decaying vegetable and animal materials, but of the flies that infest dwelling-houses, both in cities and on farms, a vast proportion come from horse manure.

It often happens, however, that this fly is very abundant in localities where little or no horse manure is

found, and in such cases it breeds in other manure, such as chicken manure in backyard poultry lots, or in slops or fermenting vegetable material, such as spent hops, moist bran, ensilage, or rotting potatoes. Accumulations of organic material on the dumping grounds of towns and cities often produce flies in great numbers.

The house fly begins laying eggs in from $2\frac{1}{2}$ to 20 days after emerging, the time interval depending to a large extent upon temperature, humidity, and character and abundance of food. The number of eggs

several females usually depositing in one spot, so that the eggs commonly are found in large clusters in selected places near the top of the pile, where a high degree of heat is maintained by the fermentation below. The second batch of eggs is laid from 8 to 10 days after the first. The eggs usually hatch in less than 24 hours. Under the most favorable conditions of temperature and moisture the egg state may last hardly more than 8 hours. The maggots which issue from the eggs are very small and transparent. They grow rapidly, completing the growth of the



Evolution of the house fly: puparium at left; adult fly in center; larva, or maggot, at right.

laid by an individual fly at one time ranges from 120 to 159 and a single female will usually lay two and sometimes four such batches. Dunn has recently reported that in Panama a fly may deposit as many as 2,367 eggs in 21 batches, and sometimes an interval of only 36 hours may occur between the deposition of large batches of eggs. The enormous numbers in which the insects occur are thus plainly accounted for, especially when the abundance and universal occurrence of appropriate larval food is considered. The eggs are deposited below the surface in the cracks and interstices of the manure,

larva stage in three days under the most favorable conditions, although this stage usually lasts from 4 to 7 days. The larval period may be prolonged greatly by low temperature or by dryness or scarcity of the larval food. As the larvæ attain full size they gradually assume a creamy white color. A few hours before pupation they become very restless and migrate from their feeding ground in search of a favorable place in which to pass the pupa stage. They will often congregate at the edges of manure piles near the ground or burrow into the soil beneath, or they may crawl considerable distances

away from the pile to pupate in the ground or in loose material under the edges of stones, boards, etc.

The pupæ or "sleepers," are more or less barrel shaped and dark brown in color. In midsummer this stage usually lasts from 3 to 6 days. The pupa stage is easily affected by temperature changes and may be prolonged during hibernation for as long as 4 or 5 months. Numerous rearing experiments in various parts of the country have shown that the shortest time between the deposition of eggs and the emergence of the adult fly is 8 days, and 10 and 12 days records were very common.

The adult fly, upon emerging from the puparium, works its way upward through the soil or manure and upon reaching the air it crawls about while its wings expand and the body hardens and assumes its normal coloration. In from $2\frac{1}{2}$ to 20 days, as previously stated, the female is ready to deposit eggs. As in the case of other periods of its life history, so the preoviposition period is prolonged considerably by the lower temperatures of spring and fall. In midsummer, with a developmental period of from 8 to 10 days from egg to adult, and a preoviposition period of from 3 to 4 days, a new generation would be started every 11 to 14 days. Thus the climate of North Carolina allows abundance of time for the development of from 12 to 14 generations every season.

Flies usually remain near their breeding places if they have plenty of food, but experiments recently made at Dallas, Tex., show that they may migrate considerable distances; in fact, house flies, so marked that the particular individuals could be identified, have been recaptured in traps as far as 13 miles from the place where they were liberated.

How the House Fly Passes the Winter

The prevailing opinion that the house fly lives through the winter as an adult, hiding in cracks and crevices of buildings, etc., appears to be erroneous. Under outdoor conditions house flies are killed during the first really cold nights, that is,

when the temperature falls to about 15 degrees or 10 degrees F. In rooms and similar places protected from winds and partially heated during the winter flies have been kept alive in cages for long periods; but they never lived through the entire winter. In longevity experiments one record of 70 days and another of 91 days was obtained. No uncaged house flies were found during three seasons' observations in unheated and only partially heated attics, stables, unused rooms, etc., where favorable temperature conditions prevailed. The common occurrence in such places of the cluster fly and a few other species, which may be easily mistaken for the house fly, is responsible for the prevailing belief as to the way the house fly overwinters. There is therefore no reliable evidence whatever that adult house flies emerging during October and November pass the winter and are able to deposit their eggs the following spring, although they may continue active in heated buildings until nearly the end of January. On the other hand, there is evidence that house flies pass the winter as larvae and pupæ, and that they sometimes breed continuously throughout the winter. In experiments at both Dallas, Tex., and Bethesda, Md., house flies have been found emerging during April from heavily infested manure heaps which had been set out and covered with cages during the preceding autumn. In the Southern States, during warm periods in mid-winter, house flies may emerge and become somewhat troublesome; they frequently lay eggs on warm days.

The second way in which the house fly may pass the winter is by continuous breeding. House flies congregate in heated rooms with the approach of the winter season. If no food or breeding materials are present they eventually die. However, where they have access to both food and suitable substances for egg laying they will continue breeding just as they do outdoors during the summer. Even in very cold climates there are undoubtedly many places,

especially in cities, where house flies would have opportunity to pass the winter in this manner.

Carriage of Disease by the House Fly

The body of the house fly is covered thickly with hairs and bristles of varying lengths, and this is especially true of the legs. Thus, when it crawls over infected material it readily becomes loaded with germs, and subsequent visits to human foods result in their contamination. Even more dangerous than the transference of germs on the legs and body of the fly is the fact that bacteria are found in greater numbers and live longer in its alimentary canal. These germs are voided, not only in the excrement of the fly, but also in small droplets of regurgitated matter which have been called "vomit spots." When we realize that flies frequent and feed upon the most filthy substances (it may be the excreta of typhoid or dysentery patients or the discharges of one suffering from tuberculosis), and that subsequently they may contaminate human foods with their feet or excreta or vomit spots, the necessity and importance of house-fly control is clear.

In army camps, in mining camps, and in great public works, where large numbers of men are brought together for a longer or shorter time, there is seldom the proper care of excreta, and the carriage of typhoid germs from the latrines and privies to food by flies is common and often results in epidemics of typhoid fever.

And such carriage of typhoid is by no means confined to great temporary camps. In farmhouses in small communities, and even in badly cared for portions of large cities, typhoid germs are carried from excrement to food by flies, and the proper supervision and treatment of the breeding places of the house fly become most important elements in the prevention of typhoid.

In the same way other intestinal germ diseases, such as Asiatic cholera, dysentery, enteritis (inflammation of the intestine), and infantile

diarrhea, are all so carried. There is strong circumstantial evidence also that tuberculosis, anthrax, yaws, ophthalmia, smallpox, tropical sore, and the eggs of parasitic worms may be and are carried in this way. In the case of over 30 different disease organisms and parasitic worms, actual laboratory proof exists, and where lacking is replaced by circumstantial evidence amounting almost to certainty.

Excluding and Capturing Flies

The principal effort to control this dangerous insect must be made at the source of supply—its breeding places. Absolute cleanliness and the removal or destruction of anything in which flies may breed are essential; and this is something that can be done even in cities. Perhaps it can be done more easily in the cities than in villages, on account of their greater police power and the lesser insistence on the rights of the individual. Once people are educated to the danger and learn to find the breeding places, the rest will be easy.

In spite of what has just been said, it is often necessary to catch or otherwise destroy adult flies, or to protect food materials from contamination and persons from annoyance or danger; hence the value of fly papers and poisons, flytraps, and screens.

The Use of Screens

A careful screening of windows and doors during the summer months with the supplementary use of sticky fly papers, is a protective measure against house flies known to everyone. As regards screening, it is only necessary here to emphasize the importance of keeping food supplies screened or otherwise covered so that flies can gain no access to them. This applies not only to homes, but also to stores, restaurants, milk shops, and the like. Screening, of course, will have no effect in decreasing the number of flies, but at least it has the virtue of lessening the danger of contamination of food. Screens should be well made and durable. In dry climates black or painted screen wire

will last fairly well and give satisfaction; in moderately moist climates, however, it will rust, and it is better to use the best grades of galvanized wire; and in humid regions, especially if near the seacoast, bronze wire or monel metal wire is undoubtedly the least expensive in the long run. A screen having a mesh of 14 strands to the inch, the kind commonly sold, is satisfactory for excluding flies, if unbroken, but a finer mesh is necessary to exclude the smaller mosquitoes.

Fly Papers and Poisons

The use of sticky fly papers to destroy flies that have gained access to houses is well known. Fly-poison preparations also are common. Many of the commercial fly poisons contain arsenic, and their use in the household is attended with considerable danger, especially to children. This danger is less with the use of a weak solution of formalin. A very effective fly poison is made by adding 3 teaspoonfuls of the commercial formalin to a pint of milk or water sweetened with a little brown sugar. A convenient way of exposing this poison is by partly filling an ordinary drinking glass with the solution. A saucer or plate is then lined with white blotting paper cut the size of the dish and placed bottom up over the glass. The whole is then quickly inverted and a small match stick placed under the edge of the glass. As the solution evaporates from the paper more flows out from the glass and thus the supply is automatically renewed.

Flytraps

Flytraps may be used to advantage in decreasing the number of flies. Their use has been advocated not only because of the immediate results, but because of the chances that the flies may be caught before they lay eggs, and the number of future generations will be reduced greatly.

Many types of flytraps are on the market. As a rule the larger ones are the more effective. Anyone with a few tools can construct flytraps for

a small part of the price of the ready-made ones. A trap which is very effective in catching flies and is easily made, durable, and cheap, may be made of four barrel hoops, four laths, a few strips of boxing, and 8½ lineal feet of screening, 24 inches wide.

The effectiveness of the traps will depend on the selection of baits. A good bait for catching house flies is 1 part of blackstrap molasses to 3 parts of water, after the mixture has been allowed to ferment for a day or two. Overripe or fermenting bananas crushed and placed in the bait pans give good results, especially with milk added to them. A mixture of equal parts brown sugar and curd of sour milk, thoroughly moistened, gives good results after it has been allowed to stand for three or four days.

Preventing the Breeding of Flies

As previously stated, fly papers, poisons, and traps are at best only temporary expedients. The most logical method of abating the fly nuisance is the elimination or treatment of all breeding places. It would appear from what is known of the life history and habits of the common house fly that it is perfectly feasible for cities and towns to reduce the numbers of this annoying and dangerous insect so greatly as to render it of comparatively slight account. On farms also, in dairies, and under rural conditions generally, much can and should be done to control the fly, which here, as elsewhere, constitutes a very serious menace to health.

Construction and Care of Stables

In formulating rules for the construction and care of stables and the disposal of manure the following points must be taken into consideration. In the first place, the ground of soil-floor stables may offer a suitable place for the development of fly larvae. The larvae will migrate from the manure to the soil and continue their growth in the moist ground. This takes place to

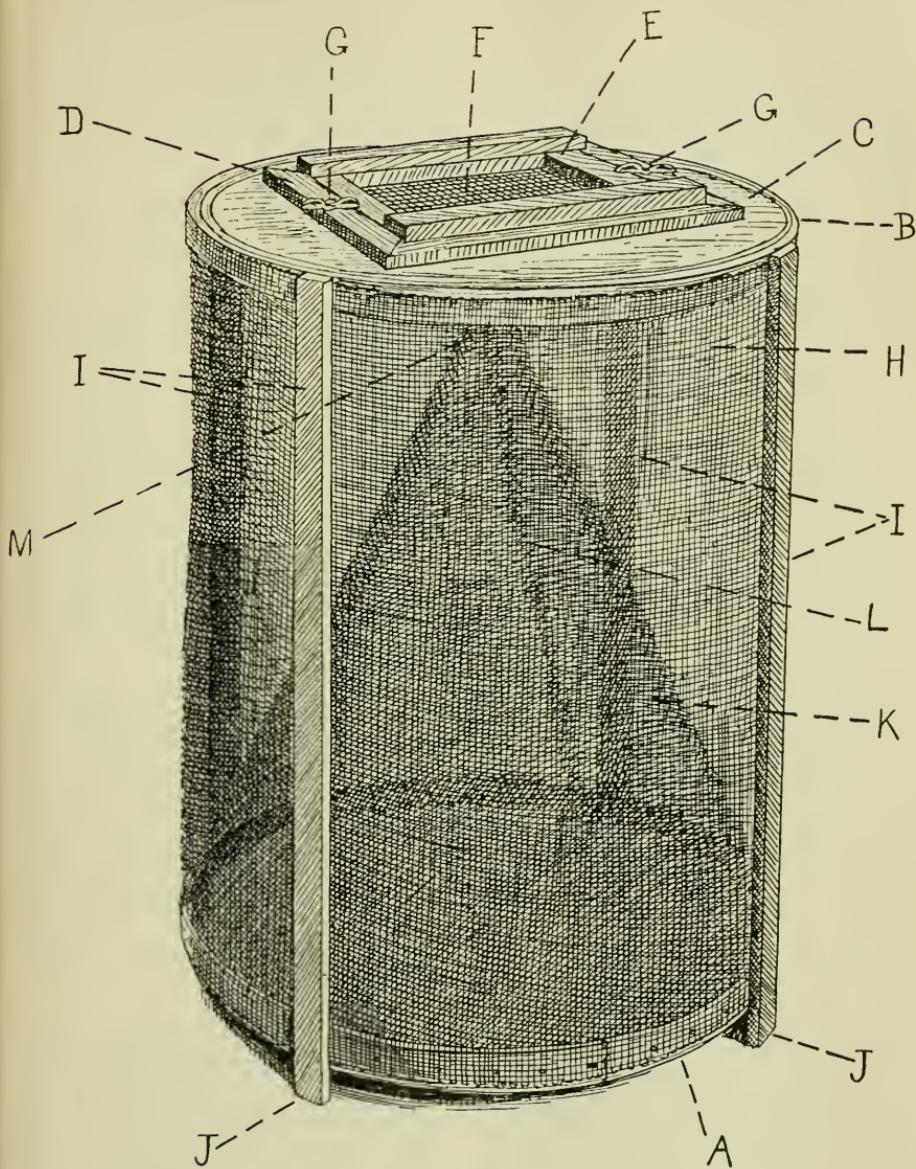


Fig. 2. Home-made trap for house flies: A, hoops forming frame at bottom; B, hoops forming frame at top; C, top of trap made of barrel head; D, strips around door; E, door frame; F, screen on door; G, buttons holding door; H, screen on outside of trap; I, strips projecting to form legs; J, legs; K, cone; L, united edges of screen forming cone; M, aperture at apex of cone.

some extent even when the manure is removed from the stables every day. Even wooden floors are not entirely satisfactory unless they are perfectly water-tight, since larvæ will crawl through the cracks and continue their development in the moist ground below. Water-tight floors of concrete or masonry, therefore, are desirable. Flies have been found to breed in surprising numbers in small accumulations of material in the corners of feed troughs and mangers, and it is important that such places be kept clean.

Fly-Tight Manure Pits

The Bureau of Entomology for a number of years has advised that manure from horse stables be kept in fly-tight pits or bins. Such pits can be built in or attached to the stable so that manure can be easily thrown in at the time of cleaning and so constructed that the manure can be readily removed. It is desirable that the manure be placed in these fly-proof receptacles as soon as possible after it is voided. The essential point is that flies be prevented from reaching the manure, and for this reason the pit or bin must be tightly constructed, preferably of concrete, and the lid kept closed except when the manure is being thrown in or removed. The difficulty has been that manure often becomes infested before it is put into the container, and flies frequently breed out before it is emptied and often escape through the cracks. To obviate these difficulties a manure box or pit with a modified tent trap or cone trap attached is desirable.

In order to retain the fertilizing value of manure to the greatest extent it is advisable that air be excluded from it as much as possible and that it be protected from the leaching action of rains. This being the case, there is really no necessity for covering a large portion of the top of the box with a trap, but merely to have holes large enough to attract flies to the light, and to cover these holes with ordinary conical traps, with the legs cut off, so that the bot-

toms of the traps will fit closely to the box. The same arrangement can be made where manure is kept in a pit. If manure boxes or pits are kept fly tight they are satisfactory under farm or dairy conditions for the storage of manure during the busy season when it cannot be hauled out daily.

Frequency With Which Manure Should be Removed in Cities and Towns

In deciding the question as to how often manure should be removed in cities and towns, it should be borne in mind that when the larvæ have finished feeding they will often leave the manure and pupate in the ground below or crawl some distance away to pupate in debris under boards or stones and the like. Hence the manure should be removed before the larvæ reach the migratory stage; that is to say, removal is necessary every three days, and certainly not less frequently than twice a week during the summer months.

Not only must horse stables be cared for, but chicken yards, piggeries, and garbage receptacles as well. In cities, with better methods of disposal of garbage and with the lessening of the number of horses and horse stables consequent upon electric street railways, bicycles, and automobiles, the time may come, and before very long, when window screens may be discarded.

Disposal of Manure in Rural and Suburban Districts

The control of flies in rural and suburban districts offers a much more difficult problem. Here it is often out of the question to remove all manure from the premises twice a week, and the problem is to find some method of disposal or storage which will conserve the fertilizing value of the manure and at the same time prevent all flies from breeding or destroy such as do breed there.

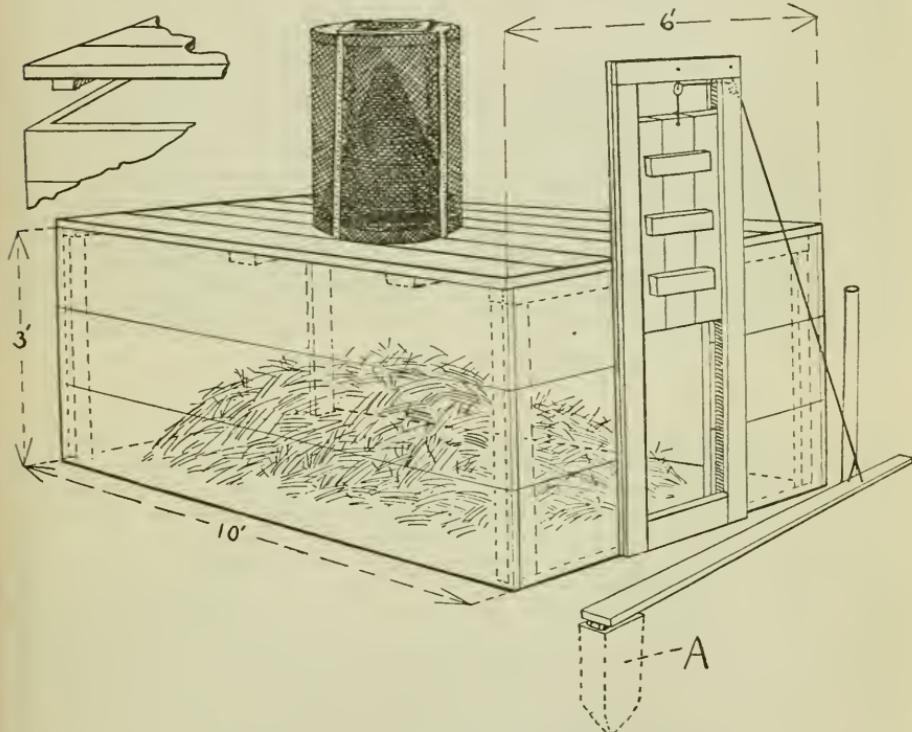
With this idea in mind, it has been recommended that stable manure be collected every morning and hauled

out at once and spread rather thinly on the fields. This procedure is advisable from the point of view of getting the maximum fertilizing value from the manure. Immediate spreading on the fields is said largely to prevent the loss of plant food which occurs when manure is allowed to stand in heaps for a long time. This method will be effective in preventing the breeding of flies only if the

the fields, they can continue their development and will pupate in the ground.

Chemical Treatment of Manure to Destroy Fly Maggots

During the summer months, when fly breeding is going on most actively, the farmer is also busy and often cannot spare the time to remove



A good manure bin with fly trap above.

manure is hauled out promptly every morning and spread thinly so that it will dry, since it is unfavorable for fly development in desiccated condition. The proper scattering of the manure on the fields is best and most easily and quickly accomplished by the use of a manure spreader, and many dairies, and even farms, are practicing the daily distribution of manure in this way. Removal every three or four days will not be sufficient. Observations have shown that if manure becomes flyblown and the maggots attain a fairly good size before the manure is scattered on

manure regularly. The general practice, therefore, has been to keep the manure in heaps located, as a rule, very near the stables. How can fly breeding be prevented in such accumulations? As a result of recent investigations, it is now possible to point out two methods which are practical and effective.

The first is the treatment of the manure pile with chemical substances which will kill the eggs and maggots of the house fly. The Bureau of Entomology, in cooperation with the Bureau of Chemistry and the Bureau of Plant Industry, has conducted a

series of experiments in which a large number of chemicals were applied to infested manure and observations made not only on their efficiency in killing the maggots but also as to their effect on the chemical composition and bacterial flora of the manure. The object was to find some cheap chemical which would be effective in destroying the fly larvæ and at the same time would not reduce the fertilizing value of the manure.

Treatment with Hellebore

Of the numerous substances tried, the one which seems best to fulfill these conditions is powdered hellebore. For the treatment of manure a water extract of the hellebore is prepared by adding $\frac{1}{2}$ pound of the powder to every 10 gallons of water, and after stirring it is allowed to stand 24 hours. The mixture thus prepared is sprinkled over the manure at the rate of 10 gallons to every 8 bushels (10 cubic feet) of manure. From the result of 12 experiments with manure piles treated under natural conditions it appears that such treatment results in the destruction of from 88 to 99 per cent of the fly larvæ.

Studies of treated manure indicated that its composition and rotting were not interfered with. Furthermore, several field tests showed that there was no apparent injury to growing crops when fertilized with treated manure.

Since the solution is somewhat poisonous it should not be left exposed where it might be drunk by livestock. It is quite safe to say that chickens will not be injured by pecking at hellebore-treated manure. This has been tested carefully. Hellebore can be obtained both in ground and powdered form, but the powder gives the best results in the destruction of fly larvæ.

Treatment With Powdered Borax

Another chemical found to be even more effective as a larvicide is powdered borax. This substance is available in commercial form in all parts

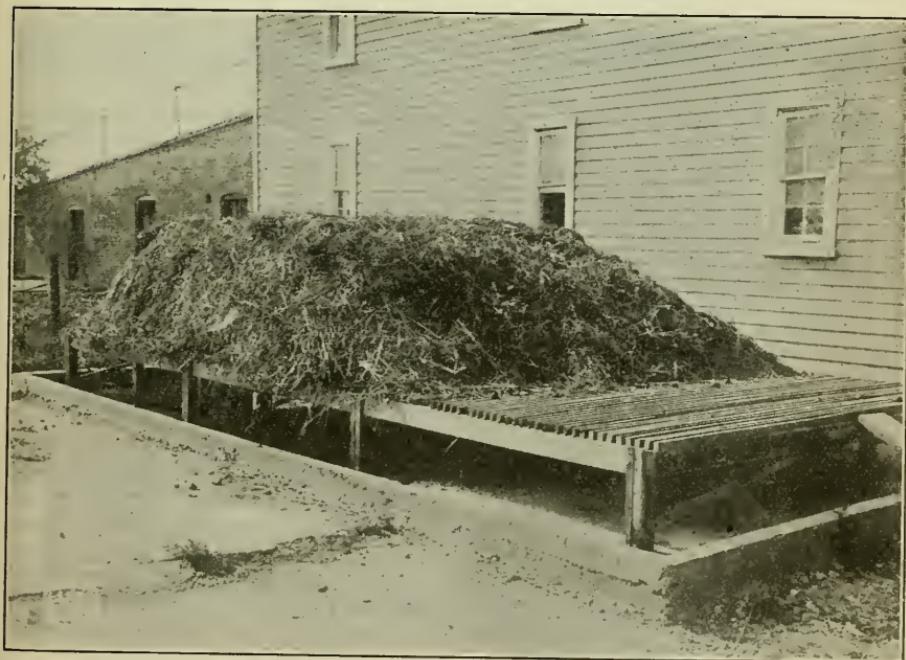
of the country. It has the advantage of being comparatively nonpoisonous and noninflammable and is easily transported and handled. The minimum amount necessary to kill fly larvæ was found to be 0.62 pound per 8 bushels of manure, or about 1 pound per 16 cubic feet. Best results were obtained when the borax was applied in solution, or when water was sprinkled on after the borax had been scattered evenly over the pile. Borax is not only effective in killing the larvæ, but when it comes in contact with the eggs it prevents them from hatching. When applied at the rate of 1 pound to 16 cubic feet it was found to kill about 90 per cent of the larvæ, heavier applications killing from 98 to 99 per cent.

Borax has no injurious effect on the chemical composition or rotting of the manure. However, when added in large quantities with manure to the soil it will cause considerable injury to growing plants. A number of experiments have been conducted to determine the effect on crops of the use of manure treated with borax as herein recommended. When applied at the rate of 15 tons per acre it appears that no injury as a rule will follow. Some crops are more sensitive to borax than others, and also the tendency to injury appears to vary on different soils. It is necessary, therefore, to repeat the warning issued in connection with a previous bulletin on this subject, that great care be exercised, in the application of borax, that the manure does not receive more than 1 pound for every 16 cubic feet, and that not more than 15 tons of manure so treated are applied to the acre.

In view of the possible injury from the borax treatment as a result of carelessness in applying it, or from other unforeseen conditions, it is recommended that horse manure and other farmyard manures which are to be used as fertilizer be treated with hellebore. Borax, on the other hand, is such a good larvicide that it can be used with advantage on the ground of soil-floor stables, in privies, on refuse piles, and on any accumula-



Egg masses of the house fly on manure.



Manure platform to prevent the breeding of house flies; the larvae migrate to the bottom of the pile, where they fall through onto the cement base below.

tions of fermenting organic matter which are not to be used for fertilizing purposes.

Treatment With Calcium Cyanamid and Acid Phosphate

Many experiments with mixtures of commercial fertilizers were tried to determine whether fly larvae would be killed by any substance, the addition of which would increase the fertilizing value of the manure. A mixture of calcium cyanamid and acid phosphate was found to possess considerable larvicidal action. Several experiments showed that $\frac{1}{2}$ pound of calcium cyanamid plus $\frac{1}{2}$ pound of acid phosphate to each bushel of manure gave an apparent larvicidal action of 98 per cent. The mixture in the form of a powder was scattered evenly over the surface and then wet down with water. The use of this mixture adds to the manure two important elements, nitrogen and phosphorus.

Maggot Trap for Destruction of Fly Larvae From Horse Manure

The second method of handling manure is one which does not require the application of chemicals. It is based on the fact before mentioned, that the larvae of the house fly, a few hours before they are ready to pupate, show a strong tendency to migrate. This migration takes place mostly at night, and the larvae sometimes crawl considerable distances from the manure pile. Now it is possible by means of a very simple arrangement called a maggot trap to destroy fully 99 per cent of all maggots breeding in a given lot of manure. A successful maggot trap which the Maryland Agricultural College constructed at the college barn is shown herewith. The trap was designed by R. H. Hutchison and constructed under his supervision. The manure, instead of being thrown on the ground, is heaped carefully on a slatted platform, which stands about 1 foot high. This particular platform measures 10 by 20 feet.

There are six 2 by 4 pieces running lengthwise 2 feet apart. Across these are nailed 1-inch strips with $\frac{1}{2}$ to 1 inch spaces between them. The wooden platform stands on a concrete floor, and a rim or wall of concrete 4 inches high surrounds the floor. The floor slopes a little toward one corner, from which a pipe leads to a small cistern near by. This pipe is plugged with a stopper of soft wood, and the concrete floor is filled with water to a depth of 1 inch in the shallowest part. Flies will lay their eggs on the manure as usual, but the maggots, when they have finished feeding and begin to migrate, crawl out of the manure, drop into the water below, and are drowned. Each week the plug is removed from the pipe, and all the maggots are washed into the cistern. The floor is then cleaned of any solid particles by means of a long-handled stable broom or by a strong stream of water from a hose. The pipe being again plugged, the floor is again partly filled with water and the trap is ready for another week's catch. A platform of this size will hold the manure accumulating from four horses during the period of four months, or about 20 days' accumulation from 25 horses, if the heap is well built and made at least 5 feet high.

Experience with this maggot trap clearly indicates that best results can be secured if the manure is compactly heaped on the platform and kept thoroughly moistened. It is best to apply a small amount of water each morning after the stable cleanings have been added to the pile.

It should be borne in mind that in order to make this trap a success the platform beneath the pile must be kept comparatively free of accumulations of manure, and moisture applied regularly to drive the maggots out.

Compact Heaping of Manure

Another method of disposing of manure has been recommended by English writers. The manure is built up in a compact rectangular heap,

the sides of which are beaten hard with shovels. The ground around the edges of the heap is made smooth and hard and loose straw is placed in small windrows around the manure pile about 1 foot from the edge. The exclusion of the air, together with the high temperature and gases formed by fermentation, tends to make the heap unfavorable for the development of fly larvæ. Those which do happen to develop in the surface layers will migrate and pupate in the ring of straw around the heap, where they are destroyed by burning.

Garbage Disposal and Treatment of Miscellaneous Breeding Places

It is just as true under farm conditions as in cities that breeding places other than horse manure must be attended to. Garbage must be disposed of, hog and poultry manure must be cared for, and especially on dairy farms it is extremely important that every precaution be taken to prevent the contamination of milk by flies.

It is very desirable that all refuse possible, accumulated from cities and towns, be burned. Incineration has been practiced successfully by a number of towns and cities with populations of from 10,000 to 15,000 and over. In larger cities provision should be made for burning carcasses as well as garbage and other refuse. If city and town garbage is sold to hog feeders the municipal authorities should have control of the sanitary conditions about the feeding yards, as there is great danger from fly breeding in such places if not kept clean.

Sewage Disposal in Relation to the Prevention of Fly-Borne Diseases

In the consideration of these measures we have not touched upon the remedies for house flies breeding in human excrement. On account of the danger of the carriage of typhoid fever, the dropping of human excrement in the open in cities or towns, either in vacant lots or in dark alleyways, should be made a misdemeanor, and the same care should be taken

by the sanitary authorities to remove or cover up such depositions as is taken in the removal of the bodies of dead animals. For modern methods of sewage disposal adapted for farm use one should consult Department of Agriculture Department Bulletin No. 57. In the absence of modern methods of sewage disposal, absolutely sanitary privies are prime necessities, whether in towns or on farms. Directions for building and caring for such privies will be found in the North Carolina Sanitary Privy Law, copy of which may be obtained by request from the Bureau of Sanitary Engineering, North Carolina State Board of Health, Raleigh, N. C.

While this law was passed, primarily for the protection of others and applies only to those privies in close proximity to other dwellings, its intrinsic worth is just as great to the individual farm home on an isolated farm. Although the isolated farmer may not be compelled by law to construct such privy, he should for his own selfish interests and the health of his own family do so.

The fecal matter in privies is seldom used for fertilizing purposes and may well be treated liberally with borax. The powdered borax may be scattered two or three times a week over the exposed surface so as to whiten it.

What Communities Can do to Eliminate the House Fly

Antifly crusades have been very numerous in recent years, and some have been noteworthy both in methods and in results. However, it will not be amiss here to emphasize the importance of concerted, organized effort on the part of whole communities, not only cities, but suburban and rural neighborhoods as well. By the most painstaking care one may prevent all fly breeding on his premises, but it will avail him little if his neighbors are not equally careful. Some sort of cooperation is necessary. One of the first and most important elements in any antifly crusade is a vigorous and continued educational campaign. It has been the experience of those who have

undertaken such crusades that people generally regard the fly as a somewhat harmless nuisance and that the first work of the campaign was to bring the people to a realization of the dangers from flies and the possibility of getting rid of them. In the educational campaign every possible means of publicity can be employed, including newspapers, lectures, moving pictures, posters, handbills, cartoons, instruction in schools, etc.

The antifly crusade is a matter of public interest and should be supported by the community as a whole and engineered by the health officers. But health officers can do little toward the necessary work of inspection and elimination without funds, and therefore the support of the campaign must manifest itself in increased appropriations for public-health work. Very often it is lack of funds which prevents the health officers from taking the initiative in the antifly crusades, and there must necessarily be much agitation and education before they can profitably take up the work. Right here lies a field for civic associations, women's clubs, boards of trade, etc., to exercise their best energy, initiative, and leadership.

UNUSUALLY BRIGHT CHILD NEEDS CAREFUL TRAINING

The superior child is often badly handicapped by faulty training, and as result may develop into an intellectual prig, or succumb to the unhappiness of a feeling of inferiority.

There is the boy of superior intelligence, whose learning ability is made a matter of pride and display on the part of his parents; he is closely guarded and taught that a prudish gentility and breeding are marks of superiority.

If he does not become an intolerable prig, he will at least suffer from lack of physical development. The ridicule of his companions, combined with poor muscular equipment, often causes such a boy to consider himself inferior, and much unhappiness results.—*Hygeia*.

TRAVELING WITH BABY DIFFICULT

Traveling with the baby is so hard on both the infant and his mother that it should not be undertaken unless absolutely necessary. In such a case careful arrangements must be made for food, clothing and other care in order to protect the baby's health.

A few simple rules for traveling with a baby are given by Drs. Julius H. Hess and I. McKy Chamberlain in March *Hygeia*, health magazine published by the American Medical Association.

Breast feeding is much the safest for baby and the easiest for his mother while traveling, but she must follow her usual routine as closely as possible so that her supply of milk does not become short. Of course, the nursing or other feeding should be done as regularly as at home. Boiled or bottled distilled water should be taken along for baby.

If the baby is bottle fed the physician should be consulted about his food, when a long trip is planned. Otherwise the feedings may be prepared at home and taken in a carefully cleaned quart thermos bottle. The food should be chilled before putting it in the thermos bottle.

On a long trip during which the food must be made up en route, it is most important to be sure of the purity of the milk bought on the way. It is advisable to use dried milk, which is always safe, on the longer trips.

An ample supply of clothing to keep the baby warm and also to provide for unexpected changes should be taken along. Mosquito netting should be used as a protection from flies and other insects. Paper linings for diapers are recommended, but rubber pants are not advised. A rubber bag may be used to keep wet diapers.

Above all things, it is important to disturb the usual routine of the infant's life as little as possible, for traveling is a great hardship for him.



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DRINK MILK

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly **THE HEALTH BULLETIN**, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
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FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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HAY FEVER

There is much that is not known about hay fever but for the person who has it there is much he would like to know. He may care little about what causes his suffering but he would like to know what will relieve it.

Although there is much that is not known, there is sufficient knowledge of hay fever to aid greatly in preventing it. Success depends in great measure on the individual himself and therefore it is worth while to get all of the information possible.

It has now been a little over one hundred years since the subject of hay fever began to be discussed in medical literature. Since this time this condition has gradually but constantly increased in prevalence until at present it is quite common.

The name "hay fever" was first given to the condition because of a noticed connection with it and the harvesting of hay. Persons having it had either come in contact with harvested hay or become afflicted at a time when grasses used for hay were blooming. Later it was found that the pollen of flowering grass acted as the irritant to bring on an attack. Still later it was proven that a great variety of pollens were equally offenders with hay in bringing on an attack. Now it is known that any plant which sheds a pollen may cause the disease and furthermore that any foreign protein, although not a pollen, will do likewise. The original name, however, still remains and is now made to include the whole group of pollen fevers although other names are used to designate the reactions to other foreign proteins.

Hay fever then today indicates a fever resulting from contact or association with pollens, including "rose cold," "autumnal fever," "hay asthma," "ragweed fever," and various names of plants common in different localities.

In North Carolina the principal offenders are timothy, blue grass, Johnson grass, corn, sorghum, rag-weeds and cockleburs. The person susceptible to one pollen may or may not be susceptible to other pollens but is more likely to be. A peculiarity of the condition is that one person reacts while another person in identical circumstances suffers no visible ill-effects of any nature. To explain the reason for this difference in individuals would be like trying to explain why one person is more susceptible to poison oak or to bee stings than another. One person will scarcely notice the sting of a bee nor can the spot where the sting occurred be seen. Another person stung by a bee will be made sick and the region of the sting swell enormously. So with pollen fevers, one person suffers while another does not. For the susceptible person any part of the body reacts to these irritant poisons. The pollen, however, must come in contact with the true skin, the conjunctiva or mucous membrane. On those parts of the body covered by a protecting epidermis the pollen cannot reach the deeper skin except through abrasions in this epidermis. This is why the symptoms of hay fever are so largely confined to eyes, nose, throat and lungs. This fact will be referred to later in discussing tests to identify the offending pollen.

Plants that are self-fertilized, or that depend on contact for cross fertilization, cause little trouble. Also plants that depend on insects, like bees, for cross-fertilization, do not create much of a hay fever problem. The plants that depend on air currents to carry the pollen from one to another are the biggest problem, for since obviously only a small part of such pollen can accomplish its purpose, nature provides a great abundance. This pollen carried by the winds is indeed a great menace to hay fever sufferers.

Those who are interested in the subject already know the symptoms quite well but to analyze briefly these symptoms may be pardoned if such analysis brings out knowledge of practical value.

Statistics show that the most universal complaint of the hay fever sufferer is of the eyes. Forty percent of all hay fever patients complain most of the eyes. When the offending pollen comes in contact with the conjunctiva there results acute inflammation. The eyes smart and the conjunctiva swells. Nature in an effort to wash out this irritant secretes an abundance of tears. Ordinarily these tears drain down into the nose through a small duct, but the swelling of the conjunctiva closes up this small drainage tube and hence the tears overflow over the face. With the inflammation of the eyes, persons seek the protection of darkened rooms and refrain from reading or using the eyes for any close work.

In the nose there is inflammation of the mucous lining of all the nasal cavities. There is tingling, burning and smarting. In an effort to expel the irritant, sneezing may be quite violent. In a further effort to get rid of the irritant by washing it out, there is abundant secretion of fluid. Eyes and nose both "run" profusely. With the swelling of the nasal mucosa, the air passages become blocked and the patient resorts to mouth breathing. This permits the direct entry of the irritant poison into the throat and bronchial tubes. The tongue tingles and burns. The

throat is irritated and the person is compelled to cough. In the bronchial tubes the swelling and irritation results in spasm of the tubes and makes breathing difficult.

The general constitutional symptoms are those of toxemia. The person feels as if he had cold or influenza, and there is some fever. Difficult breathing and the local conditions interfere with sleep and rest, and the patient soon becomes exhausted. There is usually enough stomach and intestinal disturbance to destroy the appetite. Lack of nourishment, lack of oxygenation in the lungs, disturbed rest, the fever and local annoyance makes the hay fever sufferer miserable and really sick.

The severity of the condition depends on the degree of susceptibility of the individual and also on the duration of the exposure. Even a very susceptible person may be exposed to the pollen momentarily and suffer slight reaction. The condition rapidly improves as soon as the cause is removed.

This fact, along with the fact that any part of the body surface reacts, makes it possible to test individuals for their susceptibility. By making a slight scratch on the skin of the arm just short of making it bleed, and then rubbing onto this abraded spot some of the suspected pollen (a sterile extract), there will appear, if the person is susceptible to that specific pollen, in ten to thirty minutes a wheal surrounded by an area of redness. The severity of this local reaction indicates the degree of susceptibility of that individual to that pollen. Where there are several suspected pollens, a number of scratches may be made a short distance apart at the same time and a different pollen extract applied to each scratch. In this way the reaction of each may be compared and the fact determined as to which of several irritating pollens is the most irritant to that individual.

Having, then, definitely determined in the individual patient the specific cause of the hay fever, the patient is enabled to avoid, in so far as pos-

sible, contact with that pollen. Avoiding the cause avoids hay fever.

However much this information is worth to the patient in helping him avoid contact with the causative pollen, that is not the only reason for making skin tests.

Having definitely determined the specific pollen, it is possible in many cases to "vaccinate" the individual and produce an immunity to that specific pollen which will last from one to four years. This vaccination is done by daily injections of small amounts of the pollen extract. The process requires many inoculations,

and it is vitally important that not more than two or three days at most elapse between inoculations, during the process of immunizations else there is danger of producing an increased instead of a decreased susceptibility.

While this procedure has given splendid results in the hands of some physicians, there are others that feel less enthusiastic about it. The matter of making the skin tests is not difficult nor dangerous, but the matter of inoculation should be left entirely to the decision of your own physician.

SWIMMING

Probably no form of recreational exercise has a more universal appeal for persons in every walk and age of life than swimming. Whether or not this is because there is left over in us a "hankering" for the natural environment of swimming forebears does not matter. Spring days bring yearnings into the heart of the barefoot boy for the "old swimmin' hole." When the "season" begins, society's elite gravitate toward the seashore and other watering places to indulge in swimming and the sunshine on the sands. Even the careworn and hard-worked mother who has never been permitted a plunge into deep water, breathes a secret wish for the joy and freedom of a swim. The old swimmin' hole and the modern swimming pool fill a human desire—and a human need.

Swimming affords recreation and relaxation from a monotonous grind, and swimming develops muscles that are seldom otherwise used while it develops every muscle of the body. Swimming is a rest, and at the same time a valuable exercise for body and mind.

Everything that has its advantages has also some disadvantages, and this is true of swimming. There are some dangers. The degree to which the dangers are eliminated increases by that much the wholesomeness of swimming.

Here we shall not speak so much of the possible danger of drowning

as of the other more insidious dangers. In no sense is any danger mentioned for the purpose of discouraging so valuable an activity as this is, but rather to encourage participation in it by pointing out the few disadvantages it may have in order that these may be avoided.

Many persons, apparently drowned, could be resuscitated if there was a more prevalent knowledge of how to empty the lungs of water and how to carry on artificial respiration until nature again takes up its job and natural breathing is established.

In numerous cases breathing has been restored after long, continued artificial respiration, and this should not be abandoned until there are definite indications of rigor mortis (stiffening of death).

Involuntary efforts to breathe causes the person submerged in water to "suck" much water into the lungs. The first treatment in apparent drowning is to place the body, face downward, with head much lower than the body, so that the water may have a chance to flow out, then grasp the tongue with a handkerchief, or something in the fingers to prevent slipping, and pull it gently well forward. With the face turned to one side and the air passages cleared and the patient lying on a smooth surface flat on the stomach, begin at once artificial respiration. Do this by straddling the patient on your knees and facing the patient's

head. Place your hands flat, palms down, on patient's back with your thumbs towards patient's head. Let the fingers extend downward on either side with the tips just out of sight and the little finger of each hand over the patient's last or lowest rib. Then begin counting slowly, one, two, three, four, in measured cadence about as if you were counting for slow marching. As you count one, begin making firm pressure downward, and with two let much of the weight of your own body rest on your hands. With three release the pressure, and with four let your hands perceptibly clear the patient's body. Without pause continue to repeat the cycle. By the downward pressure the air in the lungs (and water) is forced out. By releasing the pressure the ribs spring outward causing a vacuum in the chest which the air rushes in to fill. You are actually pumping air into and out of the lungs. These artificial respirations should be at the rate of about sixteen (16) per minute. The tendency in the excitement is to do this entirely too fast and irregularly. There is a feeling of great urgency, and that the faster you work the sooner you will bring back life. This very thing has cost many lives that could have been saved. As soon as the patient begins breathing, discontinue your efforts, but remain in position ready to immediately again begin if he stops.

Although the weather may be warm, the patient should be wrapped in blankets or any dry clothing available and kept warm. Rubbing the legs and arms toward the heart facilitates circulation. Do not try to have the patient swallow water or medicine until after consciousness has completely returned. Don't get excited, but work deliberately with a definite purpose for everything you do. Learning to swim will save many lives from accidental drowning.

Danger from drowning while swimming is rather remote, but there are other dangers ever present which are less conspicuous, but which may cause much annoyance and even no doubt as many deaths as actual

drowning. Chief of these dangers are the various infections. As an illustration, there is one proven instance in this State of a child contracting typhoid fever from playing in a polluted stream during August of 1925. This child in turn conveyed the infection to fifteen other persons, and of these sixteen cases of typhoid two died of the disease.

Swimming or playing in polluted water may very easily spread not only typhoid fever, but also other intestinal infections as well as local infections. Such polluted water coming in contact with an abrasion of the skin will cause a sore. Also much more so will such polluted water cause infections of eyes and nasal cavities.

The term polluted water does not refer to muddy water, but to water containing harmful bacteria. Such water may be perfectly clear and have every appearance of being pure. The safety of bathing water can only be ascertained by analysis just as drinking water is proven safe. Obviously, bacteria entering the system by way of water swallowed, or entering the nose and mouth while in swimming will be just as harmful as if that water had been swallowed as regular drinking water.

Pollution of water by bathers need scarcely be considered in streams or lakes of large volume, but such pollution in swimming pools or small streams with little current becomes indeed a serious menace.

Swimming pool control is a problem claiming the most serious consideration of all health control agencies. It will not serve our present purpose to discuss the methods for purification of swimming pools, but it is urged that for the sake of safety only those pools be patronized that have the approval of recognized authority.

It is a long established custom of the sea for ships crossing the equator to hold, on the day of crossing, a "Neptune's party." A large canvas tank or swimming pool is arranged on deck and the day is given over to various sports, but mostly water sports.

In the Navy a Neptune's party means many pranks for the sailors. Following such a party on a naval vessel, the medical officer in charge reported thirty cases of ear disease among the thirteen hundred men aboard who were put through the tank.

Thirty out of thirteen hundred is a higher proportion of "casualties" than would be expected among ordinary bathers in a pool or in the surf, but it is proof that ear troubles do sometimes follow diving or the throwing of water into the ears. This medical officer states that aside from

the thirty men who reported for various ear troubles, there were "probably a considerable number of light cases who did not report."

These or any other disadvantages from swimming are very insignificant as compared with its advantages, but even these dangers may be very greatly reduced by precaution and care.

Learning to swim in early childhood cannot be too strongly urged.

Knowing how to swim will, and does, save each year an unknown number of lives.

HOW DISEASE IS SPREAD

There has been handed down to us from time immemorial a very beneficial habit. Our mothers and grandmothers have looked on the spring house-cleaning as a sacred rite which to neglect is a disgrace. The idea was not originally to get rid of the breeding places of germs, for the knowledge of germs is relatively very recent. It must have been for purely aesthetic reasons, and the idea is practiced in much greater degree in those climates that present the greatest extremes. After a long shut-in winter there resulted much accumulation of waste and dirt which during the winter it was inconvenient to dispose of. With the open weather and open doors of spring, cleaning became possible—and, then, besides when all nature is putting on a new and brilliant costume, human beings just naturally catch the spirit, and also want to clean up and brighten up.

Whatever the motive, the result meant much to human happiness and health. Experience of all time has proven that squalor and filth are invariably accompanied by ill-health, unhappiness and a low status of morality and spiritual life. The much worn phrase that "cleanliness is next to godliness" has a sound basis of truth.

Except for the stimulus of spring and its resultant spring cleaning, it would be very easy to drift along in a careless, shiftless way, continuing

to permit the accumulated rubbish of winter to be added to by the rubbish of summer. The end result being a year-round life of filth and squalor sapping from our life its beauty, and the incentive for living and striving. It naturally follows that if periodic cleaning is good, then constant cleaning is better, and this is the ideal.

Just as nature in the spring, when the earth puts on a carpet of green and the world is filled with the sweet fragrance of flowers, stimulated to the spring house-cleaning, so clean environments stimulate to cleaning up ourselves. With clean environments we can scarcely fail to try as best we know to keep ourselves clean.

Papers blowing over the yard and tin cans and ashes filling the back yard and alleys has little direct effect on health, but does have a very powerful, indirect and often unrecognized effect. The individual who is careless in one respect is quite surely careless in all other respects. Residents in a dwelling where house and yard are cluttered up with all sorts of rubbish are very sure to take little precaution in other matters of cleanliness. The children go to school with dirty hands, faces and clothes. The dishes on their table are very poorly washed, the food is carelessly cooked, and the whole house smells musty and sour.

As you enter such a home the father, mother and children will be seen to have many decayed or miss-

ing teeth. The children are forever having colds and any contagious disease in the community will be found in that home if nature, during previous attacks, has not rendered immune those that were not killed.

Carelessness in keeping the mouth and teeth clean is the cause of the decayed teeth. Carelessness with dishes, the interchange of dirty dishes, towels and clothing makes sure the spread of "colds" or any other disease one member may get. Filth furnishes breeding places for flies and vermin which carry disease. Babies in such environment have a gloomy prospect of surviving intestinal infections. Carelessly prepared food furnishes poor nutrition to supply the needs of growth and repair.

Notice for yourself and see if you cannot guess very accurately, as you drive along the road or walk down the sidewalk, the health and moral status of the people inside by the outside appearance of the dwellings you pass.

Diseases are only spread by spreading the germs which cause them. There is no more possibility of contracting "colds," tuberculosis or pneumonia from ashes or rubbish in the yard than from rocks or earth. But such rubbish indicates carelessness in other matters that are important to health.

It has been quite popular, and it still is in places, to have "clean-up week." A clean-up week, like the spring house cleaning, does improve appearances very much and does awaken in the minds of those who participate, a desire to clean-up in other ways. A "clean-up week" is better than no clean-up at all, but even a clean-up week does some harm. It probably always does much more good than harm, but it would accomplish much greater good if there was not so apt to follow afterward a feeling of self-satisfaction and a tendency to feel that now all is well. "Eternal vigilance is the price of liberty," and eternal cleanliness is the price of health and happiness.

All contagious diseases are caused by bacteria. Most of them are caused only by one specific kind of

bacteria. For instance, the typhoid bacillus is the only thing on earth that can cause typhoid fever. The tubercle bacillus is the only thing on earth that can cause any form of tuberculosis. Whatever else may happen, one cannot get tuberculosis except he actually gets living tubercle germs into the system. One cannot get typhoid fever except he gets living typhoid germs into his system.

People very often object to a neighbor's pig pen, placed on the back of his lot, but close to their kitchen door. They honestly believe that if the health officer does not compel the neighbor to remove this pig pen their whole family will get typhoid fever, tuberculosis or some other disease. Certainly the odors from a pig pen are about as disgusting as one can imagine, and there are many reasons why pig pens should be removed from dwellings, but pig pens of themselves will not cause disease (except nausea from the odor). If excreta containing typhoid bacilli was emptied into a filthy pig pen the very filth would kill these bacteria much sooner than would fresh spring water. Tuberculosis germs are carried on floating dust, but not on odors.

All disease germs are living things, and it is no more possible for disease germs to generate (even in a pig pen) without parents than it is for human children to come into this world without parents.

We must not, however, pass the subject of pig pens without saying that the filth of pig pens furnishes ideal breeding places for flies. Flies seek just such places to lay their eggs because here is where the eggs hatch out best. Pig pens are the source of swarms of flies. These flies then will pick up on their feet and in their food living disease germs from sick persons and carry these germs to our own food and drink.

Also most pig pens make good harbors for rats and rats in their migrations pick up disease germs and bring them to the food in our dwellings. In this way and in this way only do pig pens spread disease.

Flies do scatter the germs of disease wherever they go. Flies breed

only in warm, moist substances containing sufficient organic material to furnish food to the larvae. Stables are their first choice, but any decaying rubbish will serve. "Clean-up week" will do much to get rid of flies, but there should be fifty-two such weeks each year.

As much as we hate flies, they are no worse than dirty hands. A typhoid or a tuberculosis germ that is carried to the mouth of a child on dirty hands will cause disease just as readily as if it had been carried to the food by flies.

By the way, if you will notice, you will see that the habit of putting things in the mouth is not limited to children. When you stop to think about it, you will be actually disgusted at the things you see people put in their mouths. Of course the baby puts everything in its mouth, but grown folks do, too—almost. How often have you sat talking to

some one and had the cold chills run up your back as you saw fingers that had not been washed since morning constantly rubbed over the lips and put in the mouth. How often have you seen people hold in their mouths things that would disgust a tramp if it was seen to touch food. If, in a restaurant your knife drops on the floor you would leave the place if it were again handed to you before being washed. And yet when the waiter hands you a pencil to write your order—well, just look and see for yourself. And yet that pencil never has been washed since it came from the factory.

But why mention more of such things. Diseases are caused by living germs, and these germs are scattered by carelessness. Perhaps it's time to graduate from spring house-cleaning and clean-up week and have a "careful week."

DIVIDENDS IN PUBLIC HEALTH

A Review of What County Health Departments are doing in Protecting and Promoting the Health of Their Communities

North Carolina is investing each year more than a million dollars for the purpose of protecting and promoting public health. The investment is paying handsome dividends.

The outstanding feature of public health work in the State has been the development of a system of county health departments, manned with whole-time personnel and financed adequately to perform real service. The building up of this system has been going forward now for a period of fifteen years. The first such unit to be organized in the United States was established in Guilford County on June 1, 1911. On January 1, 1926, there were in the State thirty-five counties maintaining this public service.

That such service pays in terms of lives saved and sickness prevented is demonstrated in the improved health of the State. North Carolina

today ranks as one of the most healthful states of the Union. For the past several years the State has maintained the highest birth rate in the country, and at the same time has had a death rate approximating that of the registration area, which now comprises about 85 per cent of the population of the United States. Coincident with the tremendous development of agriculture and industries during the twenty-five years of the present century has been an improvement in general health conditions no less remarkable.

On account of its geographical location, the State has been especially susceptible to two semi-tropical diseases, malaria and hookworm disease. Because of its predominant rural population typhoid fever and other fecal borne diseases have largely affected the public health. Yet today hookworm disease is becoming

comparatively rare; malaria is making a last stand in certain sections as yet undrained or only partially developed agriculturally; and typhoid fever has been reduced to a point where it no longer is a major factor affecting public health.

The vital statistics for the State as compared with those of the nation, show that North Carolina has made a markedly greater degree of improvement in the health of its people since 1900 than has the country as a whole. In 1900 the death rate for the registration area of the United States was 17.6 per thousand of population. At that time North Carolina had no accurate records, but from the data available it is estimated that the death rate was in excess of 20 per thousand of population. This very high death rate has been steadily lowered until for 1925 provisional figures indicate a rate of 11.4 per thousand of population. The death rate for the registration area the previous year was 11.9.

This marked reduction in the death rate, about fifty per cent, is the more noteworthy when considered in connection with the high birth rate. This means an addition annually to the population of the State of a large group which is most susceptible to a number of fatal diseases. Despite this large annual infant population, however, the mortality rate among infants has been reduced until the State stands well towards the top in this particular.

Tuberculosis, which holds a high place throughout the world as one of the major causes of death, last year in North Carolina claimed less victims by more than a thousand than were succumbing each year ten years ago, and the death rate for this disease neared that for the registration area. This enviable record has been made with the handicap of nearly five hundred deaths from tuberculosis of non-residents, patients at government or private sanatoria maintained in the State because of advantages of climate.

The State today is perhaps the best sanitized State in the Union,

considering its predominant rural population. It is the only State having State laws requiring the sanitary disposal of human excreta, and those laws are obeyed. Practically the entire urban population is now served with protected public water supplies and water sewerage. The semi-urban and village population, and a large portion of the rural, is protected by a system of sanitary privies which are required to be constructed and maintained in accordance with plans and specifications approved by the State Board of Health.

Money has been required in order that public health might be broadened in scope and made more efficient. This the State has given generously. Last year the State appropriation to the State Board of Health was \$389,644. For the care of the tuberculous sick \$165,000 was provided. The budgets for the local health departments exceeded \$600,000.

In 1925 there were thirty-five counties in North Carolina maintaining whole-time health departments. There were in addition five city health departments maintained independently of the county units. The personnel of the departments varied from one physician as health officer, with no assistance other than an office clerk, to a staff consisting of health officer, assistant physicians, dentist, sanitary inspectors and corps of nurses. The budgets varied from \$4,500 to \$65,000.

Thirty-three of the county units are operated in cooperation with the State Board of Health, and receive financial assistance to the extent of \$2,500 annually from the State. The other two county units, New Hanover and Guilford, were not included in 1925 in such a relationship with the State, nor were the five city departments of Charlotte, Greensboro, Winston-Salem, Asheville and Rocky Mount.

The thirty-three cooperating counties were Beaufort, Bertie, Bladen, Brunswick, Buncombe, Cabarrus, Columbus, Craven, Cumberland, Davidson, Durham, Edgecombe, Forsyth, Granville, Halifax, Henderson,

Johnston, Lenoir, Mecklenburg, Northampton, Pamlico, Pitt, Richmond, Robeson, Rowan, Rutherford, Sampson, Surry, Vance, Wake, Wayne, Wilson, Wilkes. The cash expenditure for the year for the group was \$352,393.03. From reports made by these departments, the State Board of Health is enabled to compile a composite summary showing what was accomplished, the goods bought, so to speak, with this money.

A total of 13,969 cases of communicable diseases were quarantined, these including measles, whooping cough, scarlet fever, diphtheria, chickenpox, typhoid fever, smallpox, poliomyelitis, meningitis, rubella, septic sore throat. In the effort to prevent the spread of these contagious and infectious diseases, visits were made to 11,135 homes where cases occurred. 1,996 schools were visited for the purpose of advising the children of means of protection, and similar instruction was supplied to 1,033 additional schools through the teachers. Special epidemiological investigations were made in 5,388 cases.

The effort to control communicable diseases was intensified in the preventive work accomplished. 89,950 persons were vaccinated to protect against typhoid fever; 53,224 were vaccinated against smallpox; 30,248 were immunized against diphtheria by the administration of toxin-antitoxin, and 764 were given pertussis vaccine. In the search for children susceptible to diphtheria, 41,025 were given the Schick test.

In the venereal disease control unit there were 3,667 cases reported. Legal measures were required to compel 384 of these to continue treatment until they reached a non-infectious stage, and to indigents, a total of 24,958 treatments were given, the arsphenamine required being supplied by the State.

Clinics organized for the examinations of suspected tuberculous persons provided 2,694 examinations. There were 6,027 visits to homes of those suffering with tuberculosis for the purpose of instruction in the

care of the sick and protecting other members of the family. Admission to sanatoria was secured for 268 sick individuals.

The high infant and maternal death rate of the State was attacked through intensive prenatal work. Expectant mothers numbering 3,248 were given special instruction, in group or home conferences, 24,359 mothers were given advice, and 10,205 babies were registered in special clinics. A lecture course in home care of the sick was given to 207 women, and 636 midwives were given a six-hour course of instruction in their duties and responsibilities.

In the school hygiene unit, a total of 94,345 children were examined by the health officer and nurses. Of these 31,530 were found to have some physical defect. Corrections were secured as follows: 27,824 children had dental defects treated, 3,441 had diseased tonsils and adenoids removed, 906 were fitted with glasses to correct refractive errors, 36 orthopedic corrections were secured, and 302 nutritional corrections. The Modern Health Crusade had an enrollment of 10,811. Exclusions from school for scabies totaled 1,253 and for pediculosis 991.

Certain medical relief work and routine examinations are required by law of health officers. There were 3,408 professional visits to jails, 1,931 visits to convict camps, 3,512 to county homes and 817 professional consultations with other physicians. Examinations of prisoners committed to jail totaled 4,775, applicants for marriage license 3,934, of school teachers 3,570, of children seeking permits for employment 4,442, food handlers 2,158, by special court order 292, for admission to institutions 616, for lunacy 498, postmortem 29, and at coroner's inquest 11.

In addition there were 6,179 life extension examinations made, these being of persons apparently healthy and made in order to discover any indications of the existence of any hidden degenerative disease, as of the heart, kidneys, or other functional organs. Hookworm treatments were given to 4,809.

Laboratory service occupied an important place especially in those departments in counties having a large urban population. This service included 68 widal tests, 2,897 throat cultures, 3,129 throat swabs, 1,461 examinations of feces, 297 sputum, 3,200 blood, 3,569 milk analyses, 696 Babcock tests, 1,450 water analyses, 1,266 albumen tests in prenatal cases, 5,681 urine analyses, 573 pus for gonococci, 37 for rabies, 281 Wassermann tests, and 12,376 specimens collected and forwarded to the State Laboratory.

A total of 11,680 new sanitary privies in towns and villages were constructed, and 3,010 in rural homes. An additional 11,148 were remodeled or repaired to bring them within the requirements of the State Sanitary Privy Law. Sewer connections were secured for 3,216 homes. Private water supplies numbering 313 were protected. A total of 26,-

438 nuisances of varied character were abated.

In the cities especially, there was much attention given to the protection of food supplies. There were 3,152 inspections of dairies, 902 of abattoirs, and 25,770 of hotels, cafes and markets. Examinations of food animals totaled 46,722 and 2,206 milk cows were tuberculin tested.

These items of work scattered over thirty-three counties covered a large geographical area. In accomplishing them health officers traveled by automobile 287,835 miles, nurses traveled 336,236 miles, and sanitary inspectors 160,067 miles.

On the cost equivalent basis of evaluations originated by the State Board of Health, there were produced a total of \$657,146.66 in items of work performed. On the expenditures made this gives an average earning capacity per county of \$1.87 upon each dollar invested.

PELLAGRA

History

Gaspar Casal, a Spaniard, in 1735 made some very important observations of a disease which he then called "mal de la rosa" (the disease of red spots). This, he said, was "a peculiar kind of disease consisting of a combination of scurvy and leprosy."

In 1755 a disease was observed in Northern Italy which was described under the name of "Alpine Scurvy." In 1760 a similar condition was observed in Milan and described under the name "Pellagra."

Comparison revealed the fact that the disease to which these three names had been applied was identical and the name pellagra was accepted by all and has been retained.

In the United States isolated cases appear to have been reported in New York and Massachusetts as early as 1864. In 1907 and 1908 the report of conditions in a negro asylum in Alabama shows pellagra to have been very prevalent in that institution. This report seems to have called general public attention to this dis-

ease and immediately following this there began to appear reports of pellagra from every section of the South. It is not probable that there occurred any phenomenal overnight spread of the disease from this negro asylum but rather that that report called attention to a condition which people recognized as being among them. The experience of the older doctors together with the histories of the first recognized cases indicates that the disease had been prevalent but heretofore unrecognized. Because it had been unrecognized it is not possible to say how long it had been prevalent but the universal recognition of it was like the outbreak of an epidemic.

During the past twenty years many theories have been advanced as to the cause of the disease and many different modes of treatment tried out but all of these have rather quickly given way to the original theory that the disease is caused by improper diet and that the disease can be cured, as it has been cured many thousands of times, without medicine by only correcting the diet.

Source of Information

The most valuable information available today was obtained by the exhaustive investigations of the United States Public Health Service under the direction of Doctor Joseph Goldberger.

The North Carolina State Board of Health was permitted to publish, in 1918 in special pamphlet form, an article by Doctor Goldberger which was a report of his investigations and in which he set forth his conclusions as to cause and treatment. In a letter just received from Doctor Goldberger he states that "in all essential respects the article is as good now as when written."

There has been little additional information brought out in the last six or seven years and pellagra is being conquered in the same proportion to which information regarding diet has been disseminated and taken advantage of.

Proof That it is Caused by Faulty Diet

There is no necessity for recounting the various experiments proving the connection of diet with the disease, but as illustrative of these experiments it may be worth while to cite one or two incidents. On a Mississippi Penal Farm, eleven healthy convicts were isolated under properly controlled conditions, and fed an experimental diet consisting of generous quantities of biscuit, corn bread, grits, fried mush, rice, gravy, syrup, sugar and coffee and a very restricted quantity at infrequent times of cabbage, sweet potatoes, turnip and collard greens and turnips at alternating times. All milk, butter, cheese, meats, eggs and fruit were very carefully excluded. Six of the eleven convicts developed definite symptoms of pellagra in six months, while among a large number of others living in identical circumstances in every other way except the diet, there was not one case developed.

Proof That it is Cured by Diet

Another experiment was conducted in two orphanages and one insane asylum. In the year preceding this experiment there had been in these three institutions an aggregate of more than three hundred cases observed. In no case was the regular routine modified in any degree except that the diet was modified to include a liberal allowance of such items as milk, fresh meats, eggs, legumes, fruits and fresh vegetables. The results were very clear cut, for the diseases very promptly completely disappeared from these institutions.

Geographic Distribution

Although the prevalence of the disease is mainly limited in the United States to that section South of the Potomac and Ohio rivers, yet climate itself seems to have no direct bearing on this regional distribution. The explanation for this limited area of its prevalence is found in the habitual diet of the people of this section. Persons living in any other part of the country who confine their diet to the same items eaten by pellagrous persons in the South get pellagra as readily as Southerners do. Persons living in the South who drink milk and eat lean meats and fresh vegetables do not, except in very rare instances, have pellagra.

These instances are only exceptions to a general rule and may be accounted for by the fact that such exceptional persons have not in fact partaken of these foods although they were available and composed the diet of other members of their family.

Seasonal Variations

So also the season of the year has of itself no direct influence on the disease although there is a very wide difference in its prevalence at different seasons. This seasonal increase of prevalence begins in the late spring and early summer. In North Carolina about three times as

many deaths from this disease are reported in midsummer as in midwinter. It must be remembered that the effects of malnutrition are not immediate but that the symptoms follow along sometime after the eating of insufficient or improper food. It is the improper food of winter and spring that results in serious symptoms in midsummer. It is the generally increased use of milk with green and protein foods during the summer that results in a general decline of prevalence in the fall and winter.

Statistics further indicate that children of both sexes between the ages of two and ten years are greatly affected and that women between the ages of twenty to forty are much more affected than men of the same age. Children under two years of age seem to be the least affected and in breast-fed infants, the disease is exceedingly rare. Children nursed by pellagrous mothers may be greatly undernourished but do not themselves show symptoms of pellagra.

Extent of Prevalence

The fatality rate from pellagra is estimated to be around five per cent. This means that for each person who dies of the disease there are twenty others suffering from it in various degrees of severity. During the year 1924 there were reported in this State 272 deaths (in 1915 there were 831 deaths); hence if the fatality rate is correct, which it is approximately, there are in North Carolina today 5,440 cases of pellagra. (In 1915 there were 16,620 cases). Many of these cases may be unrecognized but from the experience of many experiments all of them could be cured and other cases prevented from developing, by universally applying the information we now have regarding diet.

Pellagra Not "Catching"

Let us say right here that pellagra is not catching. At least it has not yet been possible to prove that it is and many attempts have been made to transmit it from the sick to the well. Only those diseases caused by

living germs can be "catching" and no germ has been found that can properly be considered to be its cause. Furthermore, the general appearance and behavior of the disease does not correspond to the class of diseases caused by germs. Attempts to give persons pellagra by inoculations of blood, saliva, other body discharges and scales from severe cases have failed completely. If different members of the same family or other persons closely associated all have pellagra, this does not mean that any one has contracted the disease from another but that all eat the same diet and the cause operating in one case also operated in all cases.

Why one member of a family, or of a group, should have pellagra while the others do not and yet all eat at the same table, is easy to understand when one watches the behavior of the members of that group while eating. This can only happen when the table contains a variety of food and the one individual who is "finicky" about his eating selects only certain articles and omits the essential foods which the others eat. The greatest abundance of milk, eggs, meat and vegetables on the table will not prevent pellagra unless one eats them.

This often makes it difficult to obtain a reliable history of the foods an individual case has been eating.

Symptoms of Pellagra

While there is great variation in the symptoms manifested by different individuals, there are certain uniform manifestations, upon the proper interpretation of which a diagnosis must be made. There is no known laboratory method that will prove the diagnosis.

Recounting briefly some of the major symptoms may suggest to those whose condition is uncertain or unrecognized, the advisability of seeking medical advice and correcting a faulty diet before serious damage has been done.

The three main classes of symptoms are those of the digestive system, the nervous system and the skin.

Digestive Symptoms

The symptoms arising from the digestive system are a mild indigestion, loss of appetite, changed taste, and burning or scalding of the mouth and tongue. These symptoms, at first mild, become gradually aggravated sometimes to a very serious degree. As these symptoms increase there may begin to be noticed a loss of weight. This loss of weight increases with increasing digestive disturbance. First, there is more likely to be constipation or constipation alternating with diarrhea. Later the diarrhea becomes persistent and very troublesome.

Cutaneous Symptoms

The skin symptoms have been considered the most characteristic for diagnostic purposes but in this there is great variation and skin symptoms without other characteristic symptoms may be very misleading. At first there appears an erythema, dull red or port wine in color followed by more or less pigmentation or tanning. The affected skin area becomes thickened and there is a degree of smarting or tingling. This may appear on any part of the body but almost universally it is the same on both sides. If one hand or wrist is affected the other will be also and to the same height on the arm.

In the vast majority of cases the primary erythema begins to fade in a week or ten days and is followed by the rough tanned skin which is scaly and rusty in appearance. If desquamation becomes complete there is left a smooth white or slightly pinkish surface which gradually returns to normal. In cases of long standing with repeated yearly attacks where the same skin area is involved, the skin of these areas becomes thin, dry, lifeless and assumes a dull glistening, finely wrinkled appearance.

In a much smaller number of cases there appears in the inflamed area blebs or blisters filled with serum. When these blisters run together there may be large areas of superficial skin which peel off in flakes or sheets. When these abraded and raw

surfaces become infected with pus-producing organisms there may follow a very severe condition of skin infection.

As stated above, these skin symptoms may appear on any part of the body but are most often found on the backs of the hands and wrists, tops of the feet and lower part of the legs, face, neck and chest. Occasionally the eruption may cover almost the entire body and usually the markings are alike on each side. Again patients may present all of the other characteristics of the disease and die of unquestioned pellagra without ever having shown marked skin symptoms. In no case is the severity of the skin symptoms a reliable indication of the severity of the disease. Sometimes persons with the most marked eruption experience slight distress and may even proceed with the ordinary routine of life with little other inconvenience.

Nervous Symptoms

The nervous symptoms appear early and are of equal importance with the digestive and cutaneous symptoms. Most commonly an early complaint is of feeling "all run down" and coming on, as it is most likely to do, in the spring resembles spring fever which becomes "chronic" and lasts through the summer. This may precede by weeks or months any other symptom. Dizziness (vertigo), sleeplessness and disturbed or abnormal feeling in different regions is common. There is a feeling of weight or pressure in the stomach and there may be indefinite hurting and pains most often in the feet or legs. It has been estimated that from two per cent to ten per cent of the cases develop profound mental disturbance.

Diagnosis

There can be no difficulty in making the diagnosis in a typical case presenting all or most of these symptoms but since there is so much variation in these symptoms and especially in the early stages mistaken diagnoses or no diagnosis at all is quite excusable. There is no known

method of positive proof and the decision must be made alone on the summing up of all symptoms and the finding of "probable cause," to borrow a phrase from the lawyers.

Treatment

The treatment and the prevention are the same. Diet is the paramount consideration. Drugs may be used to combat symptoms and complications but no drugs have been found of proven worth in the real treatment of pellagra. Home treatment is in most cases much less satisfactory than treatment in an institution. This is primarily because the patient has a disturbed and perverted appetite and will not voluntarily take the necessary foods even when such foods are provided. Careful inquiry almost invariably shows that such foods as fresh milk, fresh meats, eggs, and to a less extent fresh vegetables are either not eaten at all, or only irregularly and in relatively small quantities. The addition of these items in liberal proportions has been found to give uniformly satisfactory results, except of course in those extreme and exceptional cases where the gastro-intestinal involvement has advanced to the point where proper assimilation is out of the question. However, a surprisingly large number of even these far advanced cases may be cured by a careful supervision of diet. In such cases it is important that food be administered under competent supervision and in an easily digestible form.

The vast majority of all pellagrins are finicky eaters and many are bound to habits, and will, if not prevented, fill up on the foods to which they have been accustomed. In many instances where the treatment is undertaken at home the patient cannot command the proper food. Milk is undoubtedly the most important single dietary remedy and when taken alone to supplement the habitual diet should be taken in quantities of not less than one quart per day.

It is often declared that Americans eat too much meat and it is possible that some people in some sections do

but such persons do not have pellagra. In the South it is important to recognize that there are probably more people who do not eat enough fresh lean meat than there are who eat too much. Bacon and "fat back" are not substitutes for fresh lean meat nor are they helpful in preventing or curing pellagra.

In seasons when fresh lean meat is difficult to secure because of high prices or inaccessibility the use of dried soy beans as a substitute for flesh foods is to be highly recommended. They are probably the most valuable of the dried beans or peas and may be eaten boiled, baked or in meal. Both wheat flour and corn meal should be mixed with one-fifth to one-fourth of soy-bean meal. This makes valuable biscuit or corn bread for combating pellagra.

Cabbage, collards, turnips, mustard, spinach and fruits, apples, prunes, apricots, peaches and fresh fruits of all kinds, when available, should be used freely.

Sample Diet Lists

As an illustration of the practical application of the above recommendations for a health-preserving, pellagra preventing diet, the following outline of a bill of fare is presented:

Breakfast

Sweet milk, daily.

Boiled oatmeal with butter or with milk every other day.

Boiled hominy grits or mush with a meat gravy or with milk every other day.

Light bread or biscuit (one-fourth soy-bean meal), with butter daily.

Dinner .

A meat dish (beef stew, hash, or pot roast, ham or shoulder of pork, boiled or roast fowl, broiled or fried fish, or creamed salmon, or codfish cakes, etc.), at least every other day.

Macaroni with cheese, once a week.

Dried beans (boiled cowpeas with or without a little meat, baked or boiled soy beans with or without a little meat) two or three times a week.

Potatoes (Irish or sweet), four or five times a week.

Rice, two or three times a week, on days with the meat stew or the beans.

Green vegetables (cabbage, collards, turnip greens, spinach, snap beans or okra), three or four times a week.

Corn bread (one-fifth soybean meal), daily.

Buttermilk, daily.

Supper

Light bread or biscuit (one-fourth soy-bean meal) daily.

Butter, daily.

Milk (sweet or buttermilk), daily.

Stewed fruit (apples, peaches, prunes, apricots), three or four times a week, on days when there is no green vegetable for dinner.

Peanut butter, once or twice a week.

Syrup, once or twice a week.

It will be recognized that this bill of fare is primarily for older children and adults. The intelligent housewife will, of course, make such modifications as the age of her children, the tastes of her family, and her particular circumstances suggest or make necessary. Various additions may be made to give greater variety and attractiveness to the meals. The quantities of some of the foods may be reduced and replaced, in part or in whole, by other similar foods, but so far as possible no reduction should be made in the quantities of milk and lean meats. In case of young children eggs make a very desirable addition and the relative quantity of milk allowed them may advantageously be increased.

Conclusions

While the above recommendations have in view primarily pellagra prevention, the same diet serves satisfactorily also in the treatment and cure of the average case. For severe cases a more liberal allowance of milk should be made and eggs added. In some instances, in fact, only liquids can be taken. In these,

milk, fresh-meat juice, meat broth, bean, pea, or potato puree, and pot liquor should form the diet until more substantial food (milk toast, soft-boiled or coddled eggs) can be added. The food should be given at regular intervals just as is done with medicine. Indeed, for the cure of pellagra the only medicine we have is the diet. The only use that medicines serve in pellagra is the alleviation of painful symptoms and in the treatment of complicating conditions. The sooner this is realized the sooner will the quacks, both within and without the profession, be put out of business. The money that is now being wasted on useless and quack medicines is well-nigh sufficient to procure for the poor, deluded sufferers the food from the lack of which they are suffering.

A change of climate is of itself not an essential in the treatment and cure of pellagra. A change from city, village, or "camp" to a farm in the country has not infrequently been found to be beneficial. The benefit derived is to be attributed, however, not to the change of air, as is commonly thought, but rather to the fact that in the country the diet is improved by an abundance of milk, eggs, etc. Practically all the benefits of a "change of climate" may be had at home at the cost of two quarts of milk and half a dozen eggs or half a pound of stew beef a day.

The patient should be warned that a proper diet is not to be considered as a temporary thing which can be dispensed with after recovery from the attack. To avoid a recurrence of the disease and permanently to maintain health and vigor a properly selected diet is essential and must be maintained at all times. It is worth while emphasizing that if all people provided themselves and, at all times, ate a well-balanced diet, pellagra would disappear from the face of the earth. The gain to the country from the consequent reduction of sickness, invalidism, and death, and the increased physical vigor and happiness of the people cannot be over-estimated.

REST IN THE TREATMENT OF TUBERCULOSIS

By DR. P. P. McCAIN, Superintendent, Sanatorium

(Realizing that prevention is the all important consideration in the tuberculosis problem and, furthermore, that the control of tuberculosis depends to so great a degree upon the individual, the staff of the North Carolina Tuberculosis Sanatorium are now publishing a monthly newspaper for general distribution.

The purpose of this periodical is to disseminate helpful information on the subject of the prevention and cure of tuberculosis. Also it will serve as a monthly letter of Sanatorium news for "graduates" of the institution, thus keeping them in touch with the persons who became their friends while there. It will carry to each a monthly breath of Sanatorium atmosphere which will serve to keep before them the important lessons learned.

The April issue contains an article by Doctor P. P. McCain, Superintendent, on the subject of "Rest" which is of such universal and vital interest to every person in the State that we are publishing it in full.—Editor.)

REST CURE FOR EARLY TUBERCULOSIS UNSPECTACULAR, SLOW BUT CURES

For centuries the public has been repeatedly disappointed by the failure of the many so-called and widely heralded cures for consumption. There is as yet no medicine, serum or antitoxin which will cure this death-dealing disease.

Nevertheless, there is a remedy which will "cure" practically every case of early tuberculosis, which will arrest most cases of moderately advanced tuberculosis, and which will even bring about the quiescence of many cases of far advanced tuberculosis.

This "cure" is not climate, not some special diet, and not sleeping porch, but "rest"—rest of body and of mind; rest for a period of months; at first complete rest in bed and later modified rest.

To be sure, rest is a slow cure but a "cure," nevertheless. Because of its slowness and its inconvenience, and because there is nothing spectacular about it, rest is little appreciated. If every case of tuberculosis could be diagnosed early and if all would take the rest cure as they should, tuberculosis would soon become unknown.

How Rest Helps

Tuberculosis causes an inflammation in the lungs. The germs causing this inflammation—the tubercle bacilli—throw off a toxin or poison, which is absorbed by the blood and carried throughout the body. It is this poison which causes fever, loss of weight, weakness and the other symptoms of tuberculosis. The more blood there is pumped through the area of inflammation, the more toxins are absorbed and the more active are the symptoms and the more rapid is the spread of the disease. Exertion of any kind causes the heart to beat stronger and more rapidly and hence forces more blood through the inflamed area and causes the absorption of more poison.

On the contrary, the heart beats more slowly and with less force when one is lying at complete rest in bed. For this reason complete rest in bed brings about the least possible absorption of poison into the system, causes disturbing symptoms to disappear and promotes healing of the diseased area in the lung. As one's condition improves the inflammation in his chest will very slowly become less pronounced and ultimately the area diseased will become walled in by scar tissue, or at times the whole area of disease will become healed by being converted into scar tissue.

How to Rest

Most people have little conception of what "rest" means. Many think they are resting when they give up their regular work, although spending their time hunting, fishing, attending ball games, going to parties and dances or riding around the country in an automobile. They had just as well, and oftentimes better, be at their regular work, so far as helping their tuberculosis is concerned. Exertion of any kind whatever,

whether it is for pleasure or for business, causes active tuberculosis to spread.

Rest should be begun at the earliest possible moment after the discovery of the disease. At first rest should be complete—twenty-four hours a day in bed. Every case, no matter how early it is discovered, should have six or eight weeks of this sort of rest in bed. Whether or not bed rest will need to be continued longer than this will depend upon the amount of trouble in one's chest and upon the activity of his symptoms. Naturally, the more trouble one has in his chest, the more cautious he should be. Every one should remain at complete rest in bed for at least two or three weeks after his temperature has not been above normal and his pulse above 90 per minute.

How to Begin Getting Out

The matter of getting away from complete bed rest needs to be very slow. For the first week or ten days one should sit up from ten minutes to an hour, depending upon his condition. If this causes no return of fever or other unfavorable symptoms, the time out of bed can be gradually lengthened until, at the end of several weeks in early cases or of some months in more advanced cases, one is sitting up most of the day.

No matter how early the case or how well one feels, he needs to take a rest period of at least an hour and a half before dinner on a reclining chair or in a comfortable rocking chair, and at least two hours at complete rest in bed immediately after dinner. During this latter period he should undress, relax completely in bed and, if possible, go to sleep. He should remain fully two hours in bed, whether he can sleep or not, and he should under no circumstances allow his rest hour to be disturbed.

After he has been able to be up all day, with the exception of reclining period and rest hour, for several days without the appearance of any unfavorable symptoms, one can begin taking exercise, usually from five to

fifteen minutes' slow walk once a day. Usually at weekly or bi-weekly intervals, depending upon one's condition, his exercise is increased five minutes, provided no unfavorable symptoms have appeared.

The exercise should be increased with great caution, for, as stated elsewhere, too much exertion causes the absorption of poison from the diseased area in the lung and a spread of the disease. Physicians should prescribe exercise in tuberculosis with as much care as they do poisonous drugs.

After one has gotten his disease under control and is able to go back to work, he needs to continue to rest and take it easy outside of his work hours. If he tries to do two men's work or if he works during the day and runs around at night, he will likely sooner or later have another breakdown.

The Difficulties of Resting

Under complete rest the symptoms of tuberculosis clear up very rapidly. In an early case, after rest in bed for only a short while, the fever disappears, the appetite returns, the weight is regained and one looks and feels about as well as he ever did in his life. On the contrary, the tuberculous lesion in his chest heals very slowly, so slowly in fact that it takes months and months and months for an X-ray to show any material change.

It is comparatively easy for most people to stay in bed when they feel sick, but it is very difficult for them to act like sick people when they feel perfectly well. This feeling of well being gives one a false sense of security. He thinks he is as well as he feels and it is at this stage that many lose their chance of getting well by taking too much exercise or by going back to work too soon.

It is always exceedingly difficult to take the rest cure at home, and especially so after the symptoms disappear. One sees a hundred things around home which need to be attended to and when he looks well and feels well it is almost impossible to

keep from doing things which he should not. Even when a patient himself is disposed to continue the rest cure, the homefolks and friends make it very difficult for him to do so by insisting on his enjoying himself or possibly on his help with the work around home.

Sanatoria—Schools of Rest

Every one who finds out he has tuberculosis in time to be benefited ought go to a sanatorium for treatment. Even when one gets to the point where he is feeling well, it is comparatively easy for him to take

the necessary rest in a sanatorium, because "everybody is doing it." He is required to rest, so that he not only learns what to do but forms the habit of taking the cure. While he is getting well he is at the same time learning the tricks of his disease.

A well run sanatorium is as much a training school as it is a hospital. One is first taught how to take complete rest, later on how to increase his exercise with safety, and how to readjust his life so that when he returns home he can take up his work again with little danger of another breakdown.

CHILD MANAGEMENT

Our children are what we make them. The little child entering school is a sign board announcing to all the world its home environments and the kind of training it has had. The habits of the child will in most cases be the habits of the men and women of tomorrow.

Doctor D. A. Thom, in Children's Bureau publication, No. 143, has called attention to some factors that make for child habits. He says:

Whether children are obedient or disobedient is to a great extent dependent on the standards and requirements of mothers and fathers.

While Tommy is deeply engrossed in play with his toys or in a new book the carelessly shouted orders of his mother, busy with her dish washing, may pass unheeded, such commands having become so familiar that he has developed the same negative adaptation to them as the stenographer develops toward the hammering of typewriters in a busy office. He may have heard the command and appreciated what was wanted, but experience may have taught him that a command ignored by him is one forgotten by his mother—so why should he worry?

There may, however, be some doubt in his mind what to expect, for on one day mother allows her unheeded request to drop unnoticed, while on the next she may take time from her work to administer swift

and sure punishment. Inconsistency in discipline keeps the child in a most upset state of mind, and soon his response to any request comes to depend on his interest in his immediate occupation and his willingness to take a chance.

It may be that Tommy is capitalizing his disobedience. Often he has heard mother say, after coaxing and pleading a while, "Now, if you eat your dinner like a nice boy, you may have some candy," or "If you stop making so much noise, you may have a penny." If Tommy has learned that such offers follow a lack of response to the first request, it is only natural he should wait until they are made before complying. By holding out, he may obtain greater material gain and also far more attention and interest. It is something to be distinguished, if only as the "despair" of the family.

Threats of action by policemen, "bogy men," and doctors are a most unfortunate method to use in obtaining obedience. Either they cause hampering, fear, and timidity or else at an early age the child comes to realize that they are idle and meaningless and turns them to his immediate advantage. Tommy may learn to play up fear of doctors, for instance, so that by an outburst of yelling and kicking he may avoid having his teeth cared for or his eyes examined.

Are You Honest With Your Children

The importance of honesty in handling children cannot be overemphasized. If the early trust and confidence which they have in their parents is carelessly broken down, the props are knocked out of their world, for if what father and mother says is not true, what may be believed? Many times it has a direct bearing on whether or not obedience is obtained. Some parents will deliberately deceive their children in an attempt to gain obedience or in the hope of making an unpleasant task or duty less painful in anticipation.

One small lad, though he had considerable fear of pain under the dentist's hands, went through the first session manfully, shedding only a tear or two. He dreaded the second visit, however, and continually fretted about it. In order to calm him his mother assured him that "This time he will not hurt you at all." Up to this point the mother had always been right, so he believed her. The shock was a severe one when it happened that he was hurt more than on the previous visit. His implicit confidence was shattered and he became timid and fearful in new situations and showed an evident lack of trust in the statements made to him. This was clearly shown on another occasion at the dentist's several months later. There had been some question of extracting one tooth, but his mother definitely promised him that it should not be done on this particular day and that he need have no fear. If it proved necessary, arrangement would be made later to have it done under ether. He understood this clearly, yet, when actually in the dentist's chair, he became panic-stricken and could not be pacified. All reassuring statements were met with "You told me before that it wouldn't hurt, and it did. I want to go home. He shan't touch my teeth." It will be a long time, if ever, before this child regains his confidence.

Study Your Children

In dealing with children it is necessary to find out their reasons and

motives. Many times what seems like flagrant disregard for the parent's requests is to the child only an earnest desire to help mother or father, as the case may be.

The little girl of 4, who had been told time and again not to play with water, when found in the kitchen dripping wet, having spilt water all over herself, was punished for her disobedience. Later it was learned that what she had done was to climb up on the sink to get a basin of water and a cloth with which to wash the finger marks off the doorway as she had seen mother do. She slipped, the water spilled, and punishment followed. To her it must have looked as if she were punished for trying to help.

Another little boy had learned that he must never pull up the plants in the garden. He watched his father at work getting out the little weeds in the flower bed, and a few days later, in an attempt to be helpful, he pulled up all the little new growth of carrots and left standing the tall, well-developed ragweed!

Some restrictions are placed on children that it is nearly a physical impossibility for them to carry out. "Sit still" and "be quiet" are very easy to say, and yet to a healthy youngster, full of life and vigor, such commands are extremely hard to carry out for more than a few minutes at a time. Little children are growing and developing new muscle power all the time, and they must have freedom to run, jump, shout, and play. Nature demands it. Perhaps some special part of the house or yard may be set apart as theirs—a place with few dangers or hampering restrictions where they may safely "work off their steam" unchecked by continual nagging.

Making Obedience Easy

If a habit of obedience is to be built up, first of all study your child. Know what he thinks and how he reacts.

Give few well-thought-out commands and see that they are fulfilled; a command worth giving is worth

carrying out. Avoid overcorrection and an autocratic manner; children are as quick to resent domination as adults.

Gain the child's attention, then make the directions clear and simple and, if possible, explain the reason for the request. The child who has learned by experience to expect only reasonable requests will be prepared to act in an emergency when immediate response may be a vital matter.

Gain the child's interest, show him the value of the desired action, be interested in his accomplishment and in the outcome.

Make requests positive instead of negative—"Do" rather than "Do not." Give a suggestion which will draw the child's interest away from the forbidden act and focus it on something else.

Consider promises carefully before making them. Once they are made keep them or explain the reason for failure to do so. Do not break trust.

Be consistent; have one set of rules. Do not allow at one time what is forbidden at another. In this way the child will know what to expect.

Be generous with praise and appreciation of effort. Too often children receive attention only when they disobey. Let them learn to obey because the request is reasonable and because compliance brings pleasure and approbation, rather than for material reward.

Above all things expect obedience. Don't let the child feel that you are uncertain as to his response or that you are sure he will disobey. Everyone likes to live up to what is expected of him—particularly the child. He may as easily live up to your pride and confidence in him as to his reputation of being the most undisciplined little scamp in the neighborhood.

Why Children Lie

Although deliberate lying, misrepresenting the facts of the case, and tendencies to "make believe," sometimes with marked elaborations, are extremely common in children, these deviations from absolute truth are much less well defined as abnormal

conduct than stealing. Lying is almost universally connected with stealing as a means of defense, an effort on the part of the child to avoid the humiliation of confession and subsequent punishment. It is exactly what one would expect the child to do in his effort to protect himself. Successful lying which goes undetected gives the child, consciously or unconsciously, a sense of power and satisfaction owing to the fact that he has attained his end by his effort. This is especially true with the group of misrepresentations that are consciously utilized to cover up other misdemeanors.

The most vicious type of lying is that usually prompted by jealousy or by resentment toward members of the family or intimate acquaintances. This might be termed slanderous lying, the object of which is to misrepresent or place in an uncomfortable situation the individual about whom the lies are told.

Less offensive and not particularly serious is the lying of the child who is inclined to "put himself across" in a big way by exaggerating his achievements. Fabrications which tend to reflect to the credit of the child are normal mental processes in early life. Many children live in a make-believe world, and parents are apt to interpret the child's descriptions of his dream world as deliberate lying. But the whole motive is quite different, and except for making the child understand that he is not dealing with the real world and that everyone to whom he tells the tales understands that fact too, nothing need be done.

Children's Day Dreams

Fantasies which are the products of day dreaming often serve a very useful purpose in the development of the child's mental life.

One little youngster, when about 4 years of age, having been deceived by his mother regarding the death of his grandmother to whom he was much attached, took refuge in his imagination to lessen, for the moment at least, the severe sting he

felt at the loss of his grandmother. He began to tell the other children that his grandmother was not dead but had gone to New York and was going to have him and all the other children down there, and went on to describe the pleasures of the trip. One can easily see that this process of self-deception served to make his loss more tolerable.

Imaginary playmates and day dreams can be considered perfectly normal psychological mechanisms in the life of the child. It is only when these day dreams satisfy to an abnormal degree the emotional life of the child that they become serious. One must guard against allowing the habit of day dreaming to be substituted for the effort necessary to get enjoyment and satisfaction out of reality.

In dealing with the fabrications that have no basis in fact or that serve no apparent useful purpose—that is, the so-called products of day dreaming—it is neither necessary nor desirable to make the child admit the lack of reality in his dreams. It is much better simply to impress him with the fact that you, as an adult, are taking it for granted that he is making up an interesting story which amuses you as any story might and that the possibility of accepting it as truth has never occurred to you. There is less danger in encouraging these make-believe stories in children, if they are given to understand that you accept them as such, than there is in trying to inhibit them by denying their existence or by punishing the narrator. Such punishment is apt to increase the romance the child derives from his stories, fill him with self-pity, make him introspective, and drive him further away from reality.

Keep Faith With Your Children

Parents must be particularly careful not to take advantage of the mental and physical immaturity of the child by a careless and indifferent attitude toward their promises to him. Children have keen memories for many of the petty deceptions

to which parents resort in an attempt to get desirable conduct with a minimum amount of effort on their part. If, when the time comes for a child to make his first trip to the dentist, he is told that he is going to the park to see the animals, or going to visit his aunt, or on some other outing which he would naturally anticipate with pleasure, and then finds himself in a dentist's chair, the chances are that besides the temporary pain there will be resentment not only toward the dentist, but also toward his mother, which may cause a great deal of trouble later.

The doctor, the policeman, and the dog should not be used as objects of fear by parents in order to get the desired conduct. These threats work effectively once or twice, but soon the child learns that, on the whole, doctors are kindly and friendly, policemen protect rather than punish, and dogs are good playmates. Furthermore, he learns that the parent's word cannot be depended upon. He also comes to realize that from this method of instilling fear in other individuals one derives a sense of power, and he uses it on his younger brother or neighborhood friends. Cheating the child in this way not only destroys the child's affection for the parent, but gives the child an undesirable habit to imitate.

Punishment which is constant, severe, and frequently out of all proportion to what the situation demands leads to lying as a means of protection. This fact needs no comment other than the statement that frequently the punishment itself defeats the very purpose it was meant to accomplish. Many children use lying impulsively as an instinctive way of protecting themselves from disciplinary measures, especially when the corrective measures are unjustly severe or when the child realizes that his having been honest and frank will not be considered a mitigating circumstance.

Teach Truth by Example

There is no better, more logical, nor surer way of developing the habit

of truth in the child than by permitting him to live in an environment where he may have truth as an example to imitate. Moralizing in an abstract way about the beauty and value of truth has but little effect in establishing the habit of truthfulness during the early years of childhood. Parents should avoid letting a child develop the habit of lying merely because it is easier for them to avoid the issue than to meet it squarely. The lying of children is not infrequently the imitation of the same practice by other members of the family who themselves are inclined to meet every issue in life either by selfdeception or by deception of others. The ever-useful headache, saying that one is out when an undesirable neighbor calls, lack of frankness between the parents in simple household matters, and warnings to the children of "Don't tell your father" or "Don't tell your mother" tend to give the child an idea that evading the truth is perhaps a very useful bit of technique in dodging new, untried, and difficult situations.

It is not difficult to teach most children that telling the truth is worthy of effort, inasmuch as it brings them approbation of those with whom they have to live and adds to their material pleasure. This may be accomplished by giving them an environment of truth-telling and by demonstrating to them that lying will invariably work out to their disadvantage.

The Child Who Steals

Stealing is a harsh word to apply to the acts of children. It is associated so closely with a criminal career and one so naturally thinks of jails and prisons, highwaymen and robbers that childhood and this type of delinquency seem almost incompatible.

On the other hand, problems are never solved by dodging the issue. "Of course, we don't consider it stealing when Johnny takes things belonging to me or to other members of the family," said one mother in de-

fense of her 8-year-old boy, and another mother argues that "taking food or pennies is not considered pilfering." Sometimes the juvenile offender is acquitted by the parent on the ground that "he does it in such a cute way" or that "he is so unselfish—he never uses for himself the things he takes but always gives them away," or "you can't expect a child so young to understand what he is doing."

These are only a few of the numerous excuses by which parents permit themselves to be deceived. Stealing must be considered stealing as soon as the child has developed mentally and socially to the point where he is capable of differentiating his property rights from those of the people with whom he comes in contact. It must not be forgotten that most children are warned at an early age that such acts are against the wishes of their parents without being given any appreciation of the social code called honesty. In such cases the act of stealing is nothing more than disobedience and must be treated as such.

Children naturally absorb from the environment in which they are living a tendency to conform with the social customs of that environment, and they can also give an intelligent reason why such social customs are enforced. When a child reaches this stage in his development he must be held responsible for his conduct, and it is grossly unfair for parents to minimize its significance by refusing to face the issue.

Respecting the Rights of Others

Stealing is a dangerous habit because it is very apt to work out temporarily to the advantage of the child, and it can be utilized as a means of gratifying, for the moment at least, many of the desires that would otherwise have to go unfulfilled. To the child it seems a short cut to prosperity, and it is perfectly natural that he should use this method and continue it until he learns that it works out to his disadvantage.

When one considers that all children are born into the world uncivilized, nonmoral individuals, dominated entirely by selfish motives and with the sum total of their physical and mental activity directed toward seeking pleasure and avoiding pain, and that certain natural tendencies are constantly operating in early life, unchallenged by training, experience, and education, it is not surprising that pilfering among children is very common. Stealing is but a deviation from the normal instinctive tendency to acquisition. Storing away for future needs permits the individual to indulge in a feeling of security against poverty, starvation, and other calamities. It is one of the instinctive tendencies that need to be inhibited and directed by training and experience. It varies in intensity in different individuals, but to deny its existence is not solving the problem.

Perhaps habit has not been sufficiently stressed in its relation to stealing in children. The child who during his early years of development has not acquired through his home training the idea of respecting the rights and property of the family group is not likely to be a better conformer at school.

It therefore behooves every parent to instill into the mind of the child at an early age the importance of respecting the rights of others in the group in which he lives. The child must learn from actual experience that conduct which disregards the rights and property of others invariably works out to his disadvantage.

Why Do Some Children Steal?

In some cases stealing is a child's way of "getting even." Mary was an apathetic but friendly little girl who vigorously denied, even before the subject was broached, the thefts of which she was accused. She did not have to be prompted to discuss her interest, her play life, and the movies which she occasionally attended. She said that she hated dolls, liked to play ball, and enjoyed the play life on the street. Mary volunteered no complaint of her home

life, but it was not difficult to see that she was far from happy. Just before the interview was ended the child returned to the matter of stealing, stating quite openly and frankly that she had stolen. Without being questioned she confided, "Nobody likes me. I don't know why. The girls don't like me—they knock me down and tease me. I stole only from the people who teased me and from those I don't like."

Stealing was Mary's way of "getting even" with those who had hurt her by their teasing and their ridicule.

Revenge and jealousy are not uncommon motives for stealing, especially with girls, even up to the college age. A girl of 16 years was brought to court on a charge of breaking and entering. Investigation showed that on three occasions she had gone to the house of her best friend and stolen wearing apparel, skates, and a ring, all of which she carefully hid away and made no attempt to use or sell. A rather long, detailed story of the case revealed the fact that, in spite of her extreme fondness for her girl friend, there were times when she became intensely jealous of her, especially when the other girl appeared in new clothes such as her own parents could not afford to buy. It was after such periods of jealousy that she committed the thefts.

One must here assume that jealousy was a strong personality trait in the mental make-up of the girl, and it is extremely doubtful whether any treatment would completely eradicate it at her age. It is important, however, to give such an individual a better insight into her personality make-up so that she battle with her handicaps openly.

Stealing for Thrills

Sometimes stealing is resorted to by children purely as a means of excitement or adventure, and it may later become a habit as a result of poor training in the home.

A boy of 7 years, living in a foster home, began stealing before he was 5 years old. He was not particular

what he appropriated but preferred money—anything from pennies to five-dollar bills. He seemed to get a great deal of pleasure and satisfaction from the adventure itself; in fact, short changing his parents and cheating the storekeepers when he was sent on errands were favorite pastimes. The foster mother did not take seriously his petty thefts until he finally stole \$5. She found considerable amusement in telling, before the boy, how he had cheated a storekeeper, and was likely to excuse his delinquencies on the ground that "it was born right in him." It is true, to be sure, that the hereditary background was poor. His father was spoken of as a "worthless character," and little was known of the mother except that she died when the boy was 2 years of age. The foster mother was oversolicitous, "bending over backward," so to speak, in her efforts to be kind and just to the lad, and excusing the results of her poor training by the fact that "nothing could be expected of a boy with parents like that." This fatalistic attitude toward the undesirable habit coupled with her lack of appreciation of its future significance, made the prognosis in this case, even at the early age of the child, very grave.

Another boy resorted to stealing merely as a means of adventure. He was finally apprehended after climbing in one of the windows on the street floor of a large apartment house and secreting himself in the closet. During the examination he stated, "My mother thinks I do these things because I got hit in the head," referring to an accident which he had had two years before, and went on to say, "But that's not the reason. I do it because I want these things and I want to get money to spend." The boy ordinarily would have been quite satisfied to allow his injury of two years before to account for his delinquency as his mother insisted upon doing, but it so happened at the moment he was being interviewed he had the desire to appear as a normal lad and not as one who was the victim of a disordered brain.

Parents may ordinarily expect such suggestions and excuses for delinquency to be accepted by the child and to act as mitigating circumstances for his misdemeanors.

Curing the Child Who Steals

Only by studying the motives of the child who steals can we understand and intelligently treat the individual. Many children, for instance, steal as a means to a given end. Find out the end and treatment will suggest itself. A boy of 9 years, from an excellent family of culture and education, suddenly began to steal money from other members of the family, using it to purchase candy and other delicacies which he distributed among his boy companions. In this particular case, the boy's intellectual, social, and athletic activities were very much overshadowed by those of a superior and rather arrogant brother, who was constantly humiliating him. In athletics especially the boy was not so efficient as most boys of his age, and for this reason he was cut off, more or less, from his companions. He did find, however, that his popularity could be established, in a measure at least, by supplying the boys with gum and candy and treating them generously. In order to do this he resorted to thefts.

A temporary separation of the boy from his older brother by a summer at camp, explaining the underlying motives for his difficulty and laying special stress on the development of his physical life, proved to be a satisfactory solution of the problem.

Another case of his kind was that of a rather undernourished, poorly developed, anemic-looking lad 7 years of age, with a rather superior intellectual equipment, who about a year ago committed his first, and what fortunately proved to be his only, theft.

It so happened that his mother, a hard-working, conscientious woman whose husband had died a few years previously, was making a heroic struggle to keep together a family consisting of the patient and his two

sisters, one older and one younger than he. It seemed a bit more than the mother's limited finances would permit to allow Frederick to have 20 cents a week with which to buy milk at school. The boy not only needed and wanted the milk, but he was deeply humiliated when, at the recess period, all the other boys except him and two others left the classroom to get their milk.

This was the situation which tempted him to plan to steal \$5 from his mother's pocketbook. He had the bill changed and gave the two other boys who were in the same situation 20 cents each to buy their milk, keeping the same amount himself and secreting the rest of the money in the bathroom at home. His presence in the group buying milk was noticed by the teacher, who reported it to the mother. Meanwhile, the mother discovered her loss. Upon being questioned, Frederick immediately admitted the theft and returned \$4.40 to his mother. He appreciated fully the nonsocial nature of his act and the consequences which might follow if this type of conduct became a habit.

Except for making arrangements where the boy might receive milk regularly at school, as his poor physical condition demanded, and allaying the worry and anxiety of an overwrought mother, nothing in the way of treatment was instituted. Although eight months have already passed no further difficulties have been reported.

The Part of the Parent in Child Delinquency

Here are a few suggestions for parents about their relation to the delinquencies of early childhood.

The oversolicitous parent stuffs and overfeeds the emotional life of the child, whereas the stern, cold, forbidding parent deprives the child of mental nourishment, leaving him hungry and resentful. There is plenty of room between these two extremes to give a fair degree of assurance of strength and stability

to the emotional life of the child so that he will neither suffer from hunger pains nor be nauseated by overstimulation.

There is a lamentable ignorance and an inexcusable lack of interest on the part of many parents as to the resources available and utilized by the child to gratify his pleasure-seeking tendencies.

So long as children are trained and dominated by personalities inadequate because of intellectual defects or an unhealthy outlook on life, so long are we going to have children whose characters are twisted and warped through suggestion and imitation of these parents.

There is no reason why we should expect a normal child to adapt himself to an abnormal environment. The impulse to rebel in such situations is an indication of stability.

All too frequently it is the conduct which annoys and inconveniences parents that causes the most concern and not the type of conduct representing fundamental handicaps to the child in later life.

Hyperactivity, mischievousness, and curiosity are more apt to bring the child into conflict with parental authority than submissiveness, self-centeredness, and day dreaming, all of which indicate that the child is getting out of touch with the realities of life.

Very often inadequacy, inferiority, and delinquency are suggested to the child by family and neighborhood gossip regarding his difficulty in getting along at home or in school.

The parent who depends upon threats and punishment to bring about the desired conduct on the part of the child is often making a great deal of work later for the judge and the police court.

When cheating the child is held in the same contempt as cheating the adult, children will have a higher regard for truth and honesty.

No greater affliction can be thrust upon the child than that of inheriting the type of parents who refuse to allow him to grow up.

SELLING HEALTH

The laws of the State give to the county boards of health and from them to the health officer tremendous authority and yet we all know that even with this authority he can go only as far as public opinion will allow him to go. The problems of the health officer can be solved only to the extent that public opinion will back him up. If the medical knowledge now extant could be marketed to the people life could be extended by many years. The tendency of the times is to search for the new and strive for the spectacular. The health officer wants to be recognized as being up to date, and in an effort to gain this reputation the tried and proven instruments are often neglected while the energy is being directed to the latest discoveries.

The perfecting of new discoveries is a boon to mankind and when perfected they should be utilized but not at the expense of the neglect of the proven things which they do not supersede. The duty of the health officer is not in the realms of experimentation—he should not be “the first to take up the new nor yet the last to lay down the old.”

Since he can go no farther than public opinion will back him up, his primary duty is health salesmanship. He must develop public opinion if he would march forward. Educational work and publicity do not in most instances receive the proportion of effort that their importance justifies. The health officer whose vision is fixed on giving treatments is doing a great work but it isn't getting him anywhere. The more he treats, the more there are who come to be treated. He could accomplish much more by getting out and teaching his people how to avoid contracting disease. He is employed by a group to serve a group and not the individual. He can best serve the group by teaching prevention. By tradition and training the physician is individualistic and his energy by educated instinct is directed toward curing the individual. This is as it should be but the physician who abandons pri-

vate practice to engage in public health work is not fulfilling his obligation to the group who employ him if he does not also abandon this individualist attitude and think in terms of a community.

When people are as thoroughly convinced that it is worth more to them to call their doctor for vaccination or for a health examination than to call him to treat a sickness, then they will be as eager to call him for the former as they are now to call him for the latter. Parents want their children to be strong and well, and they want to be strong and well themselves. The only reason they do not always do what is best for the children or themselves is because they do not know. To thoroughly convince them may sometimes be a hard job but it is the health officer's job. The private doctor may “peddle pills” but the health officer must “peddle health.”

In the cost equivalent system one lesson thoroughly put across to a group of boys should receive more credits than one hundred V. D. treatments. “An ounce of prevention is worth a pound of cure.” A group of mothers who are taught how to utilize the most advantageously their meager resources and secure for the children the food the children most need will prevent more undernourished—malnourished—children than a whole year of free lunches. Instructing mothers stops the cause of malnutrition which in most cases is the result of improper food rather than an actual lack of food. Free lunches puts a premium on ignorance and shiftlessness and encourages a still larger crop of malnourished children next year.

To vaccinate a child in school or to operate on a defective child in school is a wonderful thing and benefits that child but it puts a premium on parental neglect. When demonstration is the most effective way to educate, then use demonstration. Clinics serve that purpose but lose their value when EDUCATION is not the motive.

DIPHTHERIA MUST GO

Of all plagues and pestilences that have struck terror to the hearts of humanity, none are more terrible than diphtheria has been. Helpless babies by the thousands of thousands have been carried away by this demon of death. All of this not alone in some far off pest hole of the South Sea Islands nor in the heart of congested centers of population, but in our own fair North Carolina.

Even today, in this day of advanced civilization and boasted education, there are hundreds of babies who in helpless innocence are sacrificed, actually SACRIFICED, to ignorance. It would be revolting if they were thrown to the crocodiles to appease some mythical god of superstition, but no more revolting than when they are needlessly thrown into the jaws of death of the demon diphtheria to be smothered and choked in an agony of helplessness.

Regarding the needlessness of this disease, Dr. C. E. A. Winslow, President of the American Public Health Association has the following to say:

"We possess a more complete knowledge of diphtheria and a more complete power over diphtheria than in the case of any other communicable disease. We can detect the incipient case and the carrier. We can measure natural immunity by the Schick test. We can produce passive immunity by the use of antitoxin and active immunity by the use of toxin-antitoxin."

"Every weapon which could be needed to fight this enemy is in our hands, yet diphtheria continues to occupy third place among the communicable diseases and kill eleven to twelve thousand persons in the registration area each year."

These deaths mostly occur in children BEFORE they reach school age but if parents will cooperate with doctors and health workers every child in the state can be absolutely protected by vaccination.

How long will we continue to sacrifice our own children to this horrible death?

CROSSING BRIDGES

When yet a little lad, I used to go with my father and mother frequently to visit an aunt and spend the day. This was seven miles away in a country that was fairly level and where the roads were straight, following section lines one mile square. Between the two places there was a small river and on either side the straight road made a gentle incline downward to the river level.

Many times in the early morning as our buggy topped the hill I have looked down and across the river to the hill on the other side fully a mile away, and thought that surely our horse could never pull the buggy to the top of the hill. It looked so high and steep while the incline down to the river seemed almost level. But father drove ahead in utter unconcern. After we crossed the bridge and began to ascend, the hill seemed

to flatten out, the ascent was so gradual and easy I secretly felt ashamed of my fears. And then on looking back the hill we had descended looked now as steep as the one ahead had looked from the other side.

Many people go through life always looking in the distance at the hill ahead. Life is one continual fear. In the morning mother awakens looking ahead at the things she must do that day, and they seem piled up before her mountain high. In frenzy and almost in despair she sighs "how can I get it all done."

The young man just out of college secures a job with much responsibility and as he looks at his job ahead in the distance his heart grows faint and he says "It's too big a job for me." He keeps worrying about it

until when finally the morning comes for him to report for duty he is so frightened he is all but useless.

Worry over looking at the hill ahead has broken many men and women. If we will remember the lesson learned by the appearance of

the road to Aunt Mary's it will save many persons the need of hospital or sanitarium.

This may be expressed in other words, "Don't cross bridges before you get to them," and "It is worry, not work that kills."

CAUSE OF THE MIDDLE AGE SPREAD

By CLEONE E. HOBBS

Why the Middle Age Spread? Several years ago a friend and I were discussing a mutual friend who had taken on weight amazingly after her first youth was past. "Why do you suppose she has gotten so fat?" I remarked. She replied laughingly, "Oh I guess it is just the middle age spread." It was the first time I had

look at him adding double chin to double chin. Watch him trying to get up when he is down, watch his eyes gradually closing from fat. Ugh! It is a disgusting picture let us shut it out. If you are a city dweller and frequent eating places you might see almost the same picture in many respects anyway.



ever heard the expression. Since that time I have read much about taking on flesh after middle age. Insurance companies tell us that the lowest death rate, after fifty, is among the skinny policy holders. According to those who have studied the subject it seems to be a matter of wise eating, work and play.

Solomon was a close observer of nature. We would do well to follow his example. If you live on a farm where there is a pig fattening on a floored pen, for the killing, go and look at him from time to time, listen to his stertorous breathing,

The pig is being fed on ground whole wheat and corn meal, buttermilk and cabbage leaves. It is a well balanced ration but that pig is on a floored pen and the farmer wanting a good supply of lard is deliberately trading on the well known proclivities of the pig. He is pouring this mixture in the trough as many as four times a day and the pig eats it.

Solomon says "Go to the ant thou sluggard and learn of her."

The real reason of the middle age spread, when we come right down to it, is too much like the pig and too little like the ant.

My sisters nearing middle age, if you begin to take on flesh you may be suspected of turning loose and giving up. Do not lose interest in work and play that kept you fit when you were younger. And eat wisely.

This applies to men also. Remember what Mrs. Poyer said in Adam Bede: "I am not denying that women folk are foolish critters, but the Lord Almighty made 'em to match the men."

THE ORIGIN OF TUBERCULOSIS SANATORIA

One of the outstanding pioneers in tuberculosis work in America, the originator of the present sanatorium plan for cure, and the proponent of the "rest, fresh air and nourishing food" doctrine was the late Dr. Edward Livingston Trudeau, founder of the Trudeau Sanatorium, New York State, and from whose ideas and accomplishments there have now sprung up more than 600 tuberculosis sanatoriums in the United States—an amazing total.

A consumptive himself, doomed to what was then thought to be certain death, Dr. Trudeau went to the Adirondack Mountains to spend his last days at his favorite sport of hunting. He did not die, but lived for 40 years, and in so living saved many others. Today his ideas are being expressed in health campaigns conducted by State and local health authorities and by 1500 organized and functioning tuberculosis and health associations, all influenced to a large degree by the pioneer work of this frail, but enthusiastic physician.

Trudeau's achievements stimulate an interest in his personality. He has been described as an ideal physician and friend with a delightful never failing sense of humor. During one of his own relapses of illness, he wrote to a friend, "I am still on my chair on my porch to which I am glued like a fly on the fly-paper. I am afraid I don't enjoy poor health as some people seem to."

Speaking before the International Congress on Tuberculosis in Washington in 1908, Dr. Trudeau said—"For 35 years I have lived in the midst of a continuous epidemic—I have lived through many of the long and dark years of ignorance, hopelessness and apathy when tuberculosis levied its pitiless toll on human

life unheeded and unhindered. But I have also lived to see the dawn of the new knowledge, to see the fall of the death-rate of tuberculosis, to see hundreds rescued, to see the whole communities growing up of men and women whose lives have been saved, and who are now engaged in saving others. I have lived to see the spread of the new light until it has encircled the globe." Trudeau's deeds shone bright indeed in "a naughty world" of ill-health and suffering.

BEAUTY AIDS HAVE VERY WIDE SALE

A Milwaukee newspaper studied the cosmetic habits of women of that city. It found that 136,349 women over 18 years of age used perfumery—69 per cent of all of the women in the city. The products of 171 different concerns were sold by the stores, and five of these concerns had 68 per cent of the total business.

Ninety-five per cent of the women used face powder, averaging three and a third boxes yearly; two-thirds of the women used flesh tint. Although there are fifty brands of face powder, four brands took 62 per cent of the trade. Many druggists were compelled to carry twenty-five or more brands to suit the individual desires of Milwaukee women.

Hair "slicker" was used by 14.57 per cent of men, while only 10.57 of women found it desirable. There are sixty-five different brands of hair slicker, and five of these have 82 per cent of the business.

With the coming of bobbed hair, 30 per cent less women used hair nets. Only 35 per cent use them at all, but the average woman uses 38 nets a year.

The safety razor has done wonders for men. It was found that 94.34 per cent of Milwaukee men over 18 years of age shave themselves. Half of the number use shaving cream to the extent of almost six tubes a year. Forty-four per cent of the number use shaving soaps in bars and sticks, 2 per cent use powder shaving soap, and a little more than 3 per cent use the newer no-water-no-brush preparations.

The clean-tooth campaign has worked wonders. Ninety-seven per cent of the families in Milwaukee use some form of preparation, over 90 per cent preferring tooth paste. There are eighty-three brands of tooth paste. The average drug store carries seventeen brands, and two or three brands net 80 per cent of the business. Only 7 per cent of the population use tooth powder. There are 39 different brands of mouth washes, and about 12 per cent of the people use them.

There are 214 brands of toilet soap, of which forty-eight are popular. The average family uses sixty-four bars a year, and five brands get 93 per cent of the business.—*Hygeia*.

MOTHER'S FRIGHT NOT CAUSE OF BIRTHMARKS

Birthmarks are often removed with splendid results. However, their removal should not be undertaken except by persons thoroughly qualified to do so.

Birthmarks are not caused by a fright of the mother, as is commonly believed. Apparently they are due to some error of development whereby the cells are not distributed properly. They cannot be traced to any other prenatal cause.

There are several kinds of birthmarks and their removal depends on the type. Electrolysis, radium and painting with collodion are some of the methods used. It is best to have them removed as early in life as possible. Some even disappear soon after birth. In all cases, however, a competent physician should be

consulted, as the different methods used require skill and a knowledge of the anatomy of the parts affected.
—*Hygeia*.

AVOIDING TYPHOID

Ten ways to avoid typhoid fever are given in *Hygeia*, popular health magazine published by the American Medical Association, in its February issue. They are:

1. Stay away from typhoid patients.
2. Prevent sick persons from handling foods.
3. Remember not to swallow water when swimming.
4. Subscribe for safe milk and pure water supplies.
5. Send typhoid patients to the hospital in the first week.
6. Refuse to drink from any well or spring that may admit drainage.
7. Appreciate that a case of uncontrolled typhoid may produce an epidemic.
8. Teach children how diseases are caused, spread, controlled and avoided.
9. Cooperate with local boards of health by having all cases reported and controlled.
10. Get vaccinated and thereby further safeguard one's self and family.

ODE TO THE FLY

Most injurious typhoid fly,
Drink with you no more will I.
When you settle on my cup,
I perchance bacteria sup;
After what I've seen today,
I would have you chased away.
I dislike those feet of thine,
What they've touched I shall decline.
Carrier of germ and spore,
Get thee hence! Return no more!
Spreader of disease, begone!
Kindly leave my food alone.



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ALL ABOARD FOR THE LAND OF HEALTH



VIA THE VEGETABLE LIMITED

This Poster made by Sarah Grier of the Charlotte public schools was awarded first prize in a State-wide contest conducted by the Extension Division of the University of North Carolina.

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
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Chickenpox	Measles	Typhoid Placards
Diphtheria	Pellagra	Venereal Diseases
Don't Spit Placards	Public Health Laws	Water Supplies
Eyes	Prenatal Care	Whooping Cough
Flies		

FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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THE Health Bulletin



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A BIRTHDAY PRESENT

There continually comes to the head of a family the problem of what he shall give to his wife and children for a birthday present. He feels that he must give something useful and yet he wants it to be something different than the ordinary daily needs which all members of the family must have whether birthdays come or not.

Candy or flowers carry joy but are soon gone. Can the same amount be expended for something that will bring smiles and gladness throughout the year?

Why not this year try, as an experiment, giving them the price of a thorough health examination by the very best physician available? Of course your own family physician is the best doctor in your community or you would not have him. Tell him that when members of your family come to him on their birthday for their health examination you do not want him to take anything for granted, but that you want him to make the most thorough and painstaking examination he knows how to make. And furthermore, you

want him to supply a full report of his findings because that report will be your birthday present to the person examined and will be preserved as a permanent record.

Should anything unusual be discovered and an early defect corrected while yet it is a simple matter, that person will remember it till his dying day and will never cease to call that examination the best birthday present he ever received.

There is yet another reason. While you give joy to the one you love how about the joy that will come to you? The joy of knowing you have avoided that which would have led to suffering and grief.

Even this is not all. The small cost of this examination may be the means of saving untold financial cost later on. It is hoped that nothing wrong will be found and, if not, then the satisfaction of knowing that is true will be worth more than any present you could possibly buy for the same sum.

Try a health examination for your birthday presents this year.

WELCOME TO NORTH CAROLINA

North Carolina welcomes every tourist that crosses her borders. North Carolina's good roads were built to use. The people of the State are proud to live where the climate is so pleasing and the people of the State are glad to share this climate with others. North Carolina wants to provide every practicable safeguard for the health and pleasure of her visitors as well as her own people. This is a big job and the measure of its success must depend on the individual co-operation of both our home folks and our visitors.

For the past two years especially, the tourist travel across the State has

been tremendous. Even an estimate of the many thousands of cars that have entered the State is impossible to make. Some of these were only passing through to play-grounds farther south but many have come and are still coming to North Carolina itself. Some came only for a short vacation but have remained to work as well as play. All have brought with them whatever diseases they may harbor and all are subjecting themselves to whatever diseases North Carolina already has.

The Board of Health is especially anxious that no person become ill while in the State and wishes to call atten-

tion to a few things that may be perfectly obvious to every one but which cannot be too often repeated.

These points are equally pertinent to the people within the State who are now beginning the summer travel for week-ends in the mountains or the seashore.

Water in all cities or villages where there is an established public water supply is most carefully guarded and may be depended on for drinking purposes. Water from individual wells, springs, or streams may or may not be safe and the tourist should take no chances with such water. The State is so thickly populated and the places where safe water may be obtained are so close together there is really no excuse for motorists to use the water along the way.

There are many tourist camps that are supplied with safe water and also have toilet facilities and sanitary police protection. Such camps are very much safer for the camper and also camping in such places makes it safer for all others. Promiscuous camping is a source of great danger of spreading any and all intestinal diseases. The time has now passed for this sort of thing and thoughtful persons will be more considerate of the rights and the health of others. The person who is careless in one respect will be careless in all respects. Picnic parties who leave papers, boxes and food scraps on the grounds where they have enjoyed a lunch in nature's dining room are unmindful of the ordinary courtesies of social life.

Milk is a wonderful food and this is especially true when one is motoring and cannot follow their regular habits. Milk will supply many deficiencies in a tourist's diet and tourists should make every effort to secure daily a liberal allowance of milk. Twenty-nine cities and larger towns in the State have now adopted the standard milk ordinance and milk served in bottles capped with caps labeled "Standard Grade A" may be depended upon to be pure and wholesome for adults and infants. Such milk is now so universally available within the State that there is no necessity for tourists using doubtful milk for themselves or the children.

In some parts of the State there is

still some malaria, although much has been done in recent years to conquer it.

Persons who live in the State as well as persons from other states, who visit those localities where there are malaria infected mosquitoes, should carry with them mosquito nets to cover their cots if they expect to camp out. The anopheles only spreads malaria at night, hence there need be little fear of malaria if sleeping cots are protected with mosquito netting.

There is the same need for the tourist to protect his food from fly contamination as for the person at home. Undoubtedly many cases of typhoid or other intestinal diseases have come from eating food at picnics or tourists' lunches that has been contaminated by flies. The difficulty of screening against flies at such times is much greater than screening the house but the danger from such flies is no less. True, there is relatively little typhoid in the State but there are many unrecognized typhoid carriers among the tourists as well as the people at home. Persons who are daily meeting new people in new places should be exceedingly careful not to be the unknown disseminator of typhoid. No person, whether child or adult, should leave home if not recently vaccinated for typhoid. The State hopes no tourist will contract typhoid while in the State and the State also hopes no typhoid carrier will scatter typhoid germs while here.

Unfortunately there has been a regrettable increase during recent years in the prevalence of rabies. Pet dogs carried by tourists can very easily contract and spread rabies. We wish to discourage all tourists from taking along any pet animals. Tourists are welcome but dogs are not.

A change is the spice of life, but Carolinians may have this change without leaving the State. Those in the mountains should take a trip to the coast. Those on the coast should take a trip to the mountains. Those in the central portion of the State should alternate. As the people of the State get better acquainted with the people in other parts of the State there will develop a more cordial intimacy and a more powerful State patriotism which, more than anything else, will mean progress.

HEALTH EXAMINATIONS

A growing emphasis is being placed on periodic health examinations in recent years. City, county, state and national public health organizations are stressing to the people the importance of every phase of preventive medicine. The medical profession itself is changing its concepts of its primary obligation to society and is turning from cure to prevention. Not that it is losing any of its desire to cure but that it is realizing the much greater value to the individual of preventing a disease before that disease has started doing damage. In effect it is simply advancing its work to an earlier period.

No phase of preventive medicine can be expected to produce greater results than properly made periodic examinations. Such an examination if not properly and thoroughly made, however, may be a real menace. If it fails to discover and make known any existing incipient degenerative disease and every focus of infection, it gives a false security that makes the individual ignore the first warnings which nature gives him.

This movement to popularize health examinations is thrusting onto the medical profession a stupendous responsibility. This responsibility must be met squarely and conscientiously.

Dr. W. D. Haggard of Nashville, Tenn., President of the A. M. A., made some remarks at a recent Conference on Periodic Medical Examinations which are worth quoting.

He says: "The major objective of this administration has been the popularization of periodic health examinations.

As your spokesman during this year, I have presented this subject to every state medical society that I have had the honor and privilege of visiting and in practically every other public address.

This subject is of such stupendous importance that I congratulate this conference on having such a comprehensive symposium to consider it. Periodic examination has been the outstanding goal. My predecessor, Dr. Pusey, did a splendid piece of work in calling attention to certain phases of medical educa-

tion and the irregular distribution of doctors. We have felt that the paramount issue before the American medical profession at this time is the periodic health examination.

We have curbed practically all of the infectious diseases to a large extent, and we have increased longevity up to the average age of 55, but we have done that largely by wiping out the infectious diseases and by improving infant welfare. What have we done for the middle aged man with the degenerative type of disease? We have made little progress. His life expectancy at present is not as great as it was a few years ago when our scheme of existence was less complex. The problem is to get the middle aged man who is prone to the degenerative diseases to be regularly examined, that the diseases may be recognized in their inception. What have we done for the heart lesions, the cardiovascular conditions? What have we done for the pneumonias, for the diabetic patient until recently, and for the nephritic and the cirrhotic patients?

It is largely the problem of getting the patient in time. The unthinking may say this will make a great deal of business for the doctors.

It is not for the benefit of the medical profession. Unfortunately we get the same person with the same disease at an incurable period; why not at an advanced period of his disease? That is the point we must make. We are not going to gain patients; the patients are going to gain health. We desire to confer an inestimable boon of prevention or amelioration on the individual before he is hopelessly ill.

It will be the greatest bond of sympathy between the patient and his physician. At present he only comes to the physician when he is sick or when he thinks he is obliged to come. In apparently normal health there should be made a careful thorough, head-to-toe physical examination at an appointed hour, not in the short crowded office hours. The candidate will appreciate a careful, thorough-going physical examination. It will be in striking contrast to those who practice irregular medicine.

PERIODIC PHYSICAL EXAMINATION



Supplies the Stitch in Time

Even now some persons, seemingly well, wish to be examined, but we, in the fullness of our ignorance, have denied them this boon. If a man comes to us in health (I am speaking of us as a profession as a whole) and says 'Doctor, I want you to look me over and see if there is any trouble,' what do you say? 'My friend, there isn't anything the matter with you, go on and forget about it.' You pat him on the shoulder. That is often all that is done.

The most deadly blow that the organized medical profession can give in its solidarity to every type of irregularity is to examine their patients so thoroughly and so carefully that they will recognize the difference between competency and the lack of ability and equipment to make an intelligent and complete examination. What do 85 per cent of the neurotic patients say to you? 'Doctor, I never get any sympathy.' That is what human nature wants. This is a sympathetic interest in

their potential maladies, whether real or imaginary.

If we can, in the result of this conference, work out practical plans whereby every man, woman and child in this country is given the benefits that will come to them from a thorough survey of their physical condition annually, and an intelligent interpretation of the findings, we will have accomplished much.

The people will avail themselves of this incomparable service if we present it properly. We hope that this conference will send every single, solitary man of us back to his constituent medical society so imbued with the importance and magnitude of this idea that he will bring it forcefully and convincingly before his medical society.

If it is properly presented and properly executed, it will be the most far reaching and beneficent step that has been taken by forward looking American medicine in this century."

MOSQUITO NETS AND SCREENING

The anopheles mosquito which spreads malaria flies at night. If every person who is infected with malaria was completely protected from mosquitoes during the night it is obvious that there would soon cease to be any malaria infected mosquitoes and this one measure could eradicate malaria.

It is even more important for the malaria patient to sleep under a net than for the well person.

Every anopheles that bites a malaria patient becomes malaria infected. A net over a well person will protect only that one individual but a net over a malarial person may protect an entire community.

In the eradication of yellow fever, if any one measure could be singled out and given more importance than another it probably would be the strict and forced isolation of yellow fever patients within double screened mosquito-proof rooms.

Such isolation of yellow fever patients is much easier but no more important than the same isolation of malaria patients. The blood of the yellow fever

patient can infect mosquitoes for not more than three days during the course of the disease while the blood of a malaria patient may infect mosquitoes at any time over an uncured period of months or even years.

If a law was practical of enforcement and EVERY case of malaria could be isolated behind mosquito proof netting until the blood was proven by examination to be free of malaria parasites the malaria could be eradicated as yellow fever has been eradicated. Since, however, present conditions and the magnitude of the problem makes such a law not practical, we must content ourselves with the development of a moral sense of our obligation to the rights of others and encourage every malaria patient to conscientiously protect others by protecting himself.

Society should look with scorn upon the individual who endangers others by exposing his own malaria infected body to mosquitoes.

To spit in another's face is a grave insult but for a malarial patient to sleep exposed to mosquitoes is a grave insult to his entire community.

BLOOD

When Noah came out of the ark he was commanded to repeople the earth and use its products for food. He must not, however, eat any flesh with the life in it, by which was meant the blood which was the seat of life. In the Pass-over sacrifice the blood was carefully drained from the lamb and poured as an offering upon the altar, the thought being that the life was given back to the God who gave it. It is all right to eat the flesh, but the life itself must be given back to Jehovah.

Thus we see that legend, handed down through centuries before recorded history began, attaches to the blood the seat of life and to the heart the seat of the soul.

Unemotional science today has taken little from the importance of this tissue and has explained (at least partially) why blood is so necessary to life, and was even considered life itself. Realizing the vital importance attached to this tissue from the very beginning of time, it is surprising that so little real truth was known about it until almost the present time. The story of William Harvey and his demonstration of the circulation of the blood never ceases to be "stranger than fiction." When in 1619 he promulgated his theory and produced his proofs he set the scientific world in a commotion which lasted for many years. Hume, the historian, remarked a significant fact when he stated that "no physician in Europe who had reached forty years of age, ever, to the end of his life, adopted Harvey's doctrine of the circulation of the blood."

The Faculty of Medicine in Paris was most violent in the attack and continued the fight for at least thirty years.

The "discovery," placed physiological knowledge upon a new foundation and opened the way for explorations in new directions. Malpighi, was among the first to employ the microscope in his investigations and this brought down on him enmity as harsh as Harvey endured. His associates declared that the "study of microscopic anatomy was adverse to the true interests of medical practice."

Harvey proved, in the main, his theory of circulation but it was Mal-

pighi, four years after Harvey's death who proved Harvey's theory of capillary circulation.

This bit of history is intensely interesting but is recounted only for the purpose of fixing the date when our present day knowledge of blood began to be obtained, and to emphasize the importance attached to this tissue throughout all time.

Purpose of the Blood

Blood is a fluid tissue with complex structure and manifold functions. Not only is the blood itself the seat of important physiological processes but it serves as the medium and vehicle of exchange between all other tissues of the body.

In the single celled organism the food elements come in direct contact with the cell wall but in the complex organism there must be a vehicle and a system of transportation to carry essential elements of nutrition to the deeper cells.

In the embryo the vascular system begins by the formation of spaces in the mesoderm. The blood cells are derivatives of this mesoderm and when they make their appearance two parallel tubes become canalized. Other spaces develop which with these original aortae become confluent and establish the circulatory system.

The fluid portion of the first blood is probably a secretion from the same cells that make up the vessel walls.

With progressive development there appears a small dilatation in the venous one of these parallel tubes at the junction of the two umbilical veins. This dilatation, as it progresses, twists upon itself and, with the formation of constrictions and partitions, becomes the heart.

Lymph and Lymphatic System

In the blood there is a watery, intercellular substance called the plasma in which is dissolved the salts, gases and nutrient elements. When this blood plasma passes through the vessel walls by osmosis and bathes deeper cells, it is, outside the vessels, called lymph.

Without some provision for the collection and return of this lymph which has

leaked through the capillary walls the tissues would soon become "water logged" producing an edema. This is accomplished by means of the lymphatic system. From lymph the tissue cells obtain food and into the lymph they discharge their waste material. The spaces between the cells are the beginnings of the lymphatic system and from these spaces the lymph is gathered in minute channels which ultimately lead back to the circulation. The lymph-nodes are solid glandular bodies at irregular intervals along the larger lymph channels.

The irritation by circulating toxins and the swellings of these lymph-nodes produces the familiar forms of adenitis. Here let us interject a practical clinical observation. A swelling of the submental and submaxillary nodes just underneath and along the line of the ramus of the jaw suggests dental infection. A swelling of the cervical anterior to the sterno-mastoid muscle suggests tonsillar infection and a swelling of the cervical posterior to the sterno-mastoid suggests infections of the scalp, most frequently parasitic infections. The lymph and lymphatic circulatory system while accessory to is an integral part of the blood and blood circulating system.

Composition of Blood

Blood is a red fluid tissue composed of (a) cells and (b) plasma.

The cells are classified into three main groups, the red cells, white cells and platelets. Of the white cells, there are many forms and subdivisions.

Red Blood Cells

The red cells, erythrocytes, number about five million per cubic millimeter in men and four and one-half million in women. In bone marrow these cells are yet nucleated and there they are called erythroblasts. Hemoglobin, which is an iron-protein compound, is a content of red cells and has the property of combining with oxygen. In the circulation, the hemoglobin of the red cells picks up oxygen in the lungs to be carried to tissue cells throughout the body. Oxygen laden hemoglobin is called oxyhemoglobin, and has, in mass, a

bright scarlet color. As the oxygen is taken up by tissue cells the color changes to a crimson. The color of the blood is an index of the oxygen content of the hemoglobin.

The usual life of the individual red cell is relatively short since the wear and tear on them is very great. The normal ability to quickly reproduce red cells is, therefore, correspondingly great. In health their number remains quite constant. In a very few hours after the accidental loss of immense numbers the proportion of red cells again attains normal. Even slight variations in number or in oxygen carrying power indicates abnormal health.

White Blood Cells

There is greater variation in the number of white cells and this ranges from 6,000 to 10,000 per cubic millimeters of healthy blood. The amoeboid motion of these white cells enables them to pass through the vessel walls where they wage relentless war against any invading bacteria. The first stage of any inflammation is a contraction of the vessels with a later dilatation which slows the blood current and increases the volume of blood in the part. Here the leucocytes (white cells) assemble in great numbers and arrange themselves in the vessel walls along the outer margin of the blood current. From here they pass through the vessel walls to attack the invaders by engulfing irritating particles. The more virulent the invading bacteria the greater will be the number of killed leucocytes (white cells). The debris of leucocytes and bacteria constitutes pus. The redness, swelling, heat and pain of inflammation is purely a matter of physics. Increased blood brings redness; dilatation of the vessels and increased blood causes swelling and the swelling and congestion produces pressure on nerve endings causing pain. Heat is being constantly radiated from the body surface, hence the surface blood has a lower temperature than the internal blood. The increased blood to the part means more of the internal warmer blood.

Blood Platelets

The blood platelets play an important part in the coagulation of blood.

Blood Plasma

It is the blood plasma which has a more diversified function. It is this intercellular substance which distributes water throughout the organism and in which are carried the gases, nutrient elements, mineral salts, protective substances (antitoxins), internal secretions, and waste substances. The water content of the plasmas makes up about 80 per cent of its volume. In this are dissolved the gases, oxygen, carbon dioxide and nitrogen. Oxygen in the red blood cells enters into chemical combination with the hemoglobin. The food stuffs and the wastes make up the larger portion of the dissolved solids. The mineral salts are essential to the growth and repair of body tissue and furthermore, the mineral salts are held by physiologists to be the excitant which stimulates heart muscle to contract.

Toxins and Antitoxins

Whenever the system is invaded by any species of disease producing bacteria these bacteria eliminate toxin or poisons. It is these toxins which usually produce the symptoms designated by the different names of disease. In the presence of these toxins nature begins the preparation of antibodies or antitoxins which are carried in the blood plasma. The function of these antitoxins is to counteract the effect of the toxins or to neutralize them and to also inhibit the growth of the specific bacteria which eliminates them. When the blood is sufficiently saturated with these antitoxins, the invading organisms are repelled and their toxins neutralized. The individual gets well of that disease. This person has developed an immunity. Such immunity may be temporary or it may remain for varying lengths of time, sometimes throughout life. An immunity developed in the presence of a specific infection to fight that infection is called an acquired immunity. With the ever changing blood plasma the antitoxin with which this plasma is once saturated remains, although the water of the plasma is being continuously taken out and replaced. The variation in the permanence of different antitoxins accounts for the variation in the permanence of the immunity to different infections.

Vaccination for smallpox, diphtheria and typhoid fever illustrate how nature may be induced to manufacture within the system an antitoxin for these infections without having the disease itself. Such an immunity is spoken of as an artificial acquired immunity. The results in all essential respects are the same as when nature liberates into the circulation an antitoxin because of the presence of the toxin of an invading species of bacteria. In some instances it has been possible to manufacture, outside the body, a substance which is analogous to the natural antitoxin made within the body. This artificial antitoxin is then injected directly into the blood stream and is carried by the plasma throughout the system and has an immediate deterrent action on the toxins of disease. As a rule this artificial antitoxin is much less permanent than a natural antitoxin, hence the immunity passes much more quickly.

There are those whose blood seems to have always contained substances which protect them against certain diseases. Some children may be repeatedly exposed to certain diseases without contracting these diseases while others even of the same family are highly susceptible.

Secretions of Ductless Glands

In the body there are various glands called the internal glands whose secretions have a powerful influence on the growth, repair and general well-being of the individual. These secretions are carried in blood plasma throughout the body. The secretion of the thyroid gland, for instance, is carried by the lymph and blood plasma to distant organs where it influences their growth and function.

Mechanism of Circulation of Blood

The blood is the vehicle of intercommunication between all parts of the body. Its efficiency as such, obviously depends entirely upon the mechanical efficiency of the system which makes possible and maintains its circulation. The heart is the force pump and the arteries, capillaries and veins are the channels through which the blood is forced. In the heart, which is a muscular organ, there are four cavities between which there are valves. These

valves all open in one direction permitting the blood to flow freely in that direction but which automatically close and prevents its back flow. By the contraction of the muscle fibres of the heart the blood with which the cavities are filled is forced out and these automatic valves permit its escape in only one direction. The average number of contractions of the heart muscle in health is about seventy (70) per minute. The heart muscle itself with its alternate contraction and relaxation would maintain a much more irregular blood flow than is maintained if it were not for the structure and action of the arteries. The arteries, like a rubber garden hose, are made up of different layers. The inner lining is of endothelial cells then comes a layer of elastic tissue surrounded by a layer of transverse muscle fibres. Outside is a layer of connective tissue. When the heart contracts it throws out violently into the arteries a volume of blood. The structure of the arteries permits them to dilate to accommodate this sudden influx of blood. With a contraction of the heart there is a dilatation of the arteries. As the valves close and the heart dilates, the arterial walls contract thus pushing along the blood current which as it reaches the smaller vessels is flowing quite evenly with little pulsation.

Blood Pressure

When one of the larger arteries is cut, or if in a surgical operation, one of the smaller arteries near the heart is cut, the blood will spurt out to a distance of several feet. The contraction of the heart muscle, plus the contraction of the arterial walls puts the blood in the vessels under considerable pressure just as the water in the city water system is under pressure.

The degree of this pressure is of much importance in a consideration of many degenerative diseases, hence the taking of blood pressure has become routine in all important physical examinations.

Blood pressure, whether it is higher or lower than normal, is not itself a disease but only one of the symptoms suggesting disease.

If the capillaries, where the blood passes through these innumerable and

exceedingly small tubes from the arterial to the venous system are constricted, much more pressure will be necessary to force a normal amount of blood through them than if they were dilated. In which case, the heart, in order to supply sufficient circulation works harder and the pressure is much higher.

Measuring Blood Pressure

The method of determining blood pressure is, in principle, exceedingly simple. It is only the measuring of the amount of pressure required to compress an artery sufficient to shut off the flow of blood through it.

If we take a loop of garden hose, hold up both open ends, and fill it with water then blow into one end the water will be forced out of the other end. The harder we blow the higher will the water be lifted in the free end of the hose.

In taking blood pressure a rubber bag, enclosed in a cloth cover is wrapped around the arm above the elbow, this bag is connected by a soft rubber tube to a glass tube in which there is mercury instead of the water in the garden hose. Air is then pumped into the rubber bag around the arm and the degree of air pressure in the bag is measured by the height to which it forces the mercury in the glass tube. As the air pressure in the bag around the arm increases, this pressure compresses the arteries against the smooth single bone of the upper arm and shuts off the flow of blood through the arteries until no pulsation can be felt below the compression at the wrist. The pressure in the glass tube in which is the column of mercury is, of course, the same as the pressure in the rubber bag around the arm. By noting the height of the column of mercury in the tube at the moment the pulse can no longer be felt it shows the amount of pressure necessary to compress the artery until the pressure from the heart can no longer force blood through the compression. Usually the scale along the side of the mercury tube is marked in millimeters instead of inches. If a person has a blood pressure of 120 that means that it requires an air pressure in the rubber cuff sufficient to raise the column of mercury 120

millimeters above the base line. If this scale were marked in inches instead of millimeters it would be proper to say the person has a certain number of inches of blood pressure. It may be remarked that 120 millimeters is about the same as four and one-half inches which is an average adult pressure. A pressure gauge with a pointed needle can be and often is used instead of the column of mercury.

When an artery is partly compressed the blood flowing through it makes a characteristic sound. Listening for this sound through a stethoscope is found to be more accurate than feeling the pulse. By this means it is not only possible to know exactly when the blood flow is entirely cut off but also when the flow begins to be impeded. The greater the blood pressure the more pressure will be necessary to impede its flow. When the heart contracts the blood pressure is increased, when the heart dilates the blood pressure is decreased. The amount of air pressure in the bag necessary to completely shut off the flow of blood when this pressure is highest is called the "systolic pressure," (systole meaning the heart in contraction). The amount of air pressure in the bag sufficient to impede the flow of blood when the pressure is the lowest is called the "diastolic pressure," (diastole meaning the heart in dilatation). The difference between the systolic and diastolic pressure is arbitrarily called the "pulse pressure."

BLOOD PRESSURE INDICATES CONDITION OF VESSELS

When the heart forces blood into very elastic arteries the dilatation of these arteries gives room for the increased amount of blood without greatly increasing the pressure. The contraction of the arteries then continues gradually forcing forward the blood stream while the heart dilates without so much variation between the systolic and diastolic pressure. When the blood is forced into arteries that are hardened and nonelastic they do not dilate, hence the pressure when the heart contracts is high and when the heart dilates the pressure is low. An increased difference, then, between the systolic and diastolic pressure suggests hardened, nonelastic arteries.

The size, or calibre, of capillaries and arteries like the contraction of the heart is controlled by nervous impulses. There are two sets of nerves controlling the vessels, the vaso-constrictors and the vaso-dilators.

Shock

In the case of shock there is a paralysis of the vaso-constrictors which allows the vessels to dilate and the individual bleeds to death in his own vessels. The vessels have suddenly become so large that there is not enough blood in the system to fill them so that circulation can efficiently be maintained. The blood pressure in shock drops very low. During an anesthetic it is often wise to repeatedly take the blood pressure in order to thus detect early any indication of approaching shock. So, also, will the blood pressure detect any indication of a failing heart.

ACTION AUTOMATIC

Heart action is regulated by nerve impulses but the stimulus which starts the contractions is believed to be a chemical one, which is within the blood itself. Probably the solution of the mineral salts, sodium, calcium and potassium chloride, is the stimulating agent. Be this as it may, the entire operation of the mechanical circulation of blood is entirely automatic and can scarcely be influenced to any appreciable degree by the will.

With violent exercise there is a demand for a greatly increased amount of blood to remove waste and supply repair material. Expenditure of energy requires combustion. Automatically, when there is increased need, the capillaries dilate and the frequency of cardiac contractions increase. The face is flushed and the heart action is tumultuous. During sound sleep the heart beats very much more slowly. When there is continued increased need of blood the heart muscle enlarges just as the muscles of the athlete or the village blacksmith are large and hard. Nature in health adjusts the muscle to meet the needs. After a long continued illness the patient must begin again taking exercise very gradually in order that an excess load be not placed on the heart before it has regained its normal muscle power.

QUESTIONS AND ANSWERS

The State Board of Health is anxious for every opportunity to spread information that will be helpful in promoting health and preventing disease.

A surprisingly large number of letters are received making inquiry about personal matters of health. These are each answered in an honest effort to give authentic information in so far as it is safe to discuss an individual case without a personal examination.

We wish, however, to explain that when letters are received which give a few symptoms and then ask for a diagnosis and a "prescription which will cure," it is simply impossible to fully comply with such requests. These letters are answered as fully as it is possible to answer them but a diagnosis cannot be made by mail and neither would it be safe to recommend any treatment in this manner. Invariably it is necessary to refer such persons to a competent physician. This is not done to avoid work in this office but because human lives cannot be trifled with in any doubtful manner. It may happen that your own physician who has be-

come thoroughly familiar with your illness may sometimes safely suggest a change in treatment or give some specific direction by phone or messenger but conscientious physicians will seldom do even this. In no case is diagnosis or treatment by mail safe. Quacks and fakers may try to get your money by mail but they do not expect to be of real benefit to their victims. It's your money they want.

When a mother says her baby has a cough which she thinks is whooping cough and then wants to know whether it is or not and if it is what to do for it, we can only answer her by giving the best available information regarding whooping cough generally without intending to express any opinion about the individual case.

The inquiring mind is the only mind that acquires knowledge. The great bulk of inquiries received indicates interest and interest means progress.

Feel free to ask whatever questions you wish for it is the business of the Board to serve the State—but do not expect the impossible.

IMMUNITY

By C. A. SHORE, M.D., Director State Laboratory of Hygiene

(An address delivered before the students of Salem College, Winston-Salem.)

I consider it a very great honor to have been invited to talk to you, but I have had many misgivings as to whether I could interest you in the topic which I have chosen. However, the whole subject of sickness and health is one that concerns us all alike—young or old, layman or physician—and there are so many things which seem to me to be of absorbing interest, that I think that it will be my own fault if I cannot convey some of that interest to you.

I shall speak briefly on the subject of immunity to disease, or we may use the word resistance instead of immunity. It is the resistance with which we are born or that which we naturally acquire and also such resistance as we have learned to acquire artificially.

Now there is doubtless a natural

limit to the span of life of all living organisms whether plant or animal, but certainly few individuals ever attain to this natural limit. Sooner or later the organisms, plant or animal or man, is attacked by other living organisms which though extremely minute in size are countless in numbers, and finally these minute enemies always win. We call such an attack an infection, and nearly all sickness is due to infection. When a tree dies in the forest it is only rarely from drought (starvation) or accident, but most often it is the result of an attack by minute bacteria or fungi which consume the living cells. A man also may die by accident or from starvation but such events are so rare that they seem to be peculiarly out of the course of nature. When, however, he loses his fight against his in-

visible living enemies we have come to accept it as the natural and ordained course of events.

This point of view is wrong. We are no more justified in neglecting all reasonable protection against infection than we would be to step in front of a passing automobile, and death from an automobile accident is no more unnatural than death from the accident of infection.

The living organisms which attack us are for the most part minute plants and they are called bacteria; others are minute animals and are classed under the general name of Protozoa. These organisms, of one kind or another, are present everywhere and there are many kinds which are capable of causing disease in man. We cannot hope to escape them altogether and not one of us here has escaped some infection in the past although, so far, our defense has been effective. When we had measles, whooping cough, influenza or a bad cold, it was due to infection and at the same time and with the same infection some of our neighbors died. Why is it that with the same infection one dies and another recovers? To put it another way, what is it that ever stops an infection when it is once started? Somewhere and somehow a defense is formed and it is the chief aim of the Science of Preventive Medicine to find the mechanism of this defense and to stimulate it if present in insufficient amount, or to create it, if possible, if not present at all.

Not only do individuals differ from each other in their resistance but they may have a varying amount of immunity at different periods in their lives. Thus, nearly all infants are susceptible to diphtheria but more than half of the adult men and women have become so immune that they run no danger of contracting the disease. One attack of typhoid fever generally confers an immunity for life against another attack, still it would not be safe for an individual to expose himself to too great a risk. He might have enough immunity to resist a small number of bacteria, say a few thousands, but if he were to drink a glass of infected milk with countless millions of bacteria he might not have enough immunity to overcome them.

Immunity is therefore a relative thing and there is probably no such thing as an absolute immunity against the common infectious bacteria. This is an important point to bear in mind for it helps us to understand why certain artificial methods of producing immunity may have great general value even though they do occasionally fail.

From the racial point of view immunity is likewise relative. Compared to the South Sea Islanders, we are relatively immune to measles. Yellow fever is a far more dangerous disease to the white man than it is to the negro. Still greater variations are seen between the different races of animals; thus all the lower animals are immune to measles, influenza and leprosy; only the cow and man have smallpox and this is mild in cattle. Man on the other hand is immune to many of the diseases of the lower animals. These are interesting facts in themselves and it is necessary to know as much as possible about natural immunity before we can hope greatly to increase our natural resistance by artificial means.

The first successful use of the artificial production of immunity was the inoculation of cowpox in order to protect against smallpox. It is probable that this procedure was practiced in several places and there is a tradition that one of the earliest men to use it was Dr. Kalberlahn in our own Wachovia, but it was Jenner, a country doctor in England whose practice of it first received general notice. In a terrible epidemic in England he observed that certain milkmaids seemed to be immune. Their own explanation was that they were protected because they previously had been infected with sores contracted by milking cows which were ill with cowpox. There was no other explanation at hand and Jenner ventured to inoculate his patients with cowpox and found that none of them contracted smallpox. This did not prevent a great outcry from the Fundamentalists of the day and a few weak echoes still remain. However, a terrible scourge of the human race has lost its terrors.

This early work stood alone for nearly a hundred years and it was not until the work of Pasteur that it was understood that cowpox and smallpox

were one disease—that in the cow the disease was mild and that if transferred from the cow to man the symptoms were also mild, but that nevertheless the body manufactured a protection against any future infection from a human source.

Pasteur was the first to apply exact laboratory methods to the problems of immunity. To begin with he first proved that infections were due to the activities of living organisms, and that these germs (which we may call them), did not originate *de novo* but were in every case the descendants of a parent organism just as is man and all other forms of life. Pasteur found that old cultures of chicken cholera bacteria injected into chickens would not kill them but that such injection would protect against a later injection of virulent fresh bacteria. This knowledge fitted in with the results of Jenner with smallpox and explained them.

It was soon found, however, that not all disease viruses could be so weakened to a safe point for inoculation into man, that each disease was a separate problem, and that immunity to one might be totally different in character from that of another. I cannot enter into a theoretical discussion of these differences but can only say that for a limited number of diseases an effective means of producing artificial immunity has been worked out and we shall describe a few of them, but first say a few words about the different kinds of immunity.

In the artificial methods of producing immunity, the body is sometimes made to manufacture its own protection and the result is called an Active Immunity. In other cases the protective substances are transferred from one body to another by means of injections of blood serum and this is called a Passive Immunity. The latter is usually of only short duration but in this class belongs some of the triumphs of preventive medicine. By a brief description of some from each class I can perhaps best illustrate my subject.

As already stated, smallpox was the first disease for which artificial protection was found. As now prepared we do not wait for the accidental finding of a case of cowpox but starting with a pustule from a human case of smallpox a calf is inoculated on the skin.

Several transfers are made from calf to calf until the virus is weakened in its virulence for man. The scabs from the calf are removed, ground very fine and stored in glycerine at a temperature below the freezing point. The glycerine and the freezing kill the other bacteria which are invariably present in all surface scabs, but the virus itself,—strange to say—is not injured. The preparation is called VACCINE from the Latin word, Vacca, a cow. By a most interesting derivation the word vaccine is now used to describe all the substances which are used for the production of active immunity, although they have no relation to the cow, smallpox vaccine alone excepted.

Rabies vaccine is secured from the brain and spinal cords of rabbits which have been inoculated with a very rapid form of rabies. There is no story more thrilling than the description of Pasteur's first trial of this vaccine on a little French boy who had been bitten by a rabid dog. He had successfully protected animals by experimental work but he did not know that the same result could be obtained in man.

A whole series of vaccines are made without the use of animals. The bacteria instead are grown on culture media in the laboratory. Typhoid vaccine is perhaps the most successful of this type. The germs are grown in large flasks on solid culture media, the bacteria are washed off, killed by heat and standardized as to amount, and the bodies of the killed bacteria form the essential part of the vaccine.

As an illustration of the passive immunity class I will describe diphtheria antitoxin as this is the great triumph of the class. When a child has diphtheria, the bacteria remain localized to the white patches in the throat or nose or thachea and they do not infect the whole body as do many other bacteria. They do, however, manufacture a poison which circulates in the blood and unless the patient can manufacture the antidote in sufficient quantity, he quickly succumbs. Now a good many persons can do this unaided but the poison acts quickly and the production of the antidote is slow. It was, therefore, a great achievement when von Behring succeeded in producing the antitoxin in the horse and was able to transfer it by injections of the

horse's blood serum into man. The process is fairly simple now that we know how to do it. The diphtheria germs are grown in beef broth in the laboratory. The bacteria form a mouldy looking scum on the surface of the broth. The toxin or poison which these bacteria excrete is dissolved in the broth,—and a powerful poison it is. It is many times more poisonous than rattlesnake venom in similar amount. There is only one substance known which is more poisonous and that is the toxin of the tetanus bacillus which is produced in a similar manner.

The toxic broth is sterilized and then carefully standardized as to strength and small amounts are injected into a horse. The horse has a rise of temperature for a few hours but he at once begins to manufacture, in his blood, an antitoxin, and shortly he is well. He can now stand injection twice as large as the first and again his body protects itself. The doses are graduated to cause as little suffering as possible and finally, after a series of injections some of his blood is withdrawn and it is tested for the amount of antitoxin which it may possess. By means of certain chemical precipitations the antitoxin is concentrated in small volume and most of the unessential parts of the blood serum can be discarded. The strength of the antitoxin is again carefully tested by injections into guinea pigs and tubed in a sterile manner ready for use. This is the diphtheria antitoxin with which you are all familiar. It carries to the human body the protective substances manufactured by the body-cells of the horse. It has the great advantage that its beneficial effects are almost instantaneous. If given early in the disease it is safe to say that it always protects the patient. On the other hand the immunity which it produces is of short duration, as is the case with all passive immunities.

Within the last few years a method of giving active immunity against diphtheria has been discovered. Extremely small amounts of a toxin and antitoxin mixture are injected and then the body begins to manufacture its own antitoxin. It takes some weeks to do this and its value is therefore in prevention only and it should not be given when

the patient is ill with diphtheria, as immediate aid is then wanted.

We could in this manner go through a list of many vaccines and antitoxins but we cannot talk about them all. In addition to human vaccines and serums quite a number are used in diseases of domestic animals. Unfortunately, there are still very many diseases for which no antitoxin nor vaccine has been discovered. For instance, as yet no markedly successful vaccine for the diseases of the respiratory tract has been found. We believe that in the future some of these will be found but we have no assurance of this and if some should be discovered it is not likely to be a lucky accident but it will be the result of an endless amount of work and experimentation.

In our own State Laboratory a number of vaccines and antitoxins are now made. We began with the typhoid vaccine. Col. Russell had wiped out typhoid fever in the U. S. Army by compulsory vaccination and his carefully kept records established for the first time the exact value of the vaccine. We believed that we could accomplish something similar in our State, and the typhoid vaccine has been given to all who would take it since 1913. To those of us who remember the abundance of typhoid fever twenty years ago the change is very great though there are doubtless other contributing factors than the vaccine.

Later other products were taken up as opportunity offered and as it seemed that something could be accomplished. The laboratory now makes smallpox vaccine, whooping cough vaccine, diphtheria vaccine, diphtheria antitoxin, tetanus antitoxin and several other products. The plant is not spectacular but if you can visit the laboratory you can see the twenty-four (24) horses on diphtheria antitoxin, the calves for smallpox vaccine, and,—if you can stand it,—you may see the rabbits with rabies and the guinea pigs for the standardization tests. The typhoid bacteria growing in bottles will not hurt any one's sensibilities and you would be surprised at the number of gallons of typhoid vaccine sent out each year.

I regret that my talk cannot be illustrated by a trip through the Laboratory where the various processes might be seen in operation.

INFECTION AND PREVENTION OF TUBERCULOSIS

By J. H. WILLIAMS, M.D.

(From Sanatorium Sun)

In fighting against infection in tuberculosis we have two different persons to deal with. First, the donor—one who has tuberculosis and therefore is or may become infectious. Second, the recipient, someone to be infected. Any one who has tuberculosis may cough up germs at any time, though frequent examinations may not have revealed any in his sputum. He may not be sick enough to suggest tuberculosis to himself or to his companions and, unnoticed, coughs out a spray of germs upon his non-tuberculosis companions, or if he is careless about his habits, expectorates on the ground where later the germs are stirred up by sweeping or the wind to be inhaled by someone else. The germs are spread, therefore, by one who has tuberculosis and does not know it, or by one knowing that he has tuberculosis and is not careful to shield his mouth when coughing or fails to destroy his sputum.

It is easy to see how infection may occur in the home where there is a parent, brother, sister, or frequent visitor who has tuberculosis and does not know it or is careless about shielding his mouth and destroying his sputum. They kiss the child who is not able to prevent it, they cough a spray of germs in the air of the room where the child breathes and upon the furniture and floor where the child has a second chance to get the germs in crawling or playing on the floor or when the germs are stirred up in the dust when sweeping the floor. They handle articles that in turn are handled by the child and often let the child eat or drink after themselves. We have had several patients who were maids and nurses in homes where there was no tuberculosis and were caring for the children and handling the clothing and food of all the family.

Infection May Occur Anywhere

The home is not the only place where infection occurs and one does not have to have tuberculous relatives to become tuberculous. Anyone who attends a public gathering, visits a public place, travels on public conveyances or works in a public shop or office may become infected from a careless tuberculous patient, or one who does not know that he has tuberculosis, easier than he can in a tuberculous home or a sanatorium where sanitary precautions are taken. The busy man in the office or on a car with you may have a cigarette cough or he may have tuberculosis and look well. The young lady in the office, church or on a public conveyance may have a cold or she may have tuberculosis and an artificial color on her cheeks. The waiter or porter may be tired and worn out from over work and long hours or he may be almost dead from tuberculosis. They may unconsciously and unnoticed cough a fine spray of germs into the air by not covering their mouth when they cough and you may breathe the germ laden air into your lungs.

Two Ways of Prevention

There are two ways of preventing tuberculosis as a disease. First, prevent infection. Second, prevent the disease after infection occurs by keeping your health in best condition. Early diagnosis is one of the most important factors in either. When one is diagnosed early it is easier for him to get it arrested and there is a greater possibility of his getting well. Every day that he goes without knowing about his trouble and does not have a chance to take treatment, or learn to protect other people, someone is liable to be infected by him. Every day that he goes without taking treatment he is probably getting worse and expectorates more

germs, thereby increasing his danger to other people. Every day that he does not take the cure and gets worse increases the time he will have to spend on the cure in order to get well.

Do Not Fear Examination

How can one get an early diagnosis? First, by not being afraid to be examined. Anyone who has ever been exposed to tuberculosis should be afraid that he has tuberculosis until it is proven that he does not by a thorough examination by one competent to diagnose tuberculosis, not once but repeated at intervals. Most people take a vacation of some kind at least once a year. They go to church at least once a year and may spend a week or more in a revival, all of which is well and good. How many have an examination before they get sick? How many suspect tuberculosis, the most prevalent disease, when they get sick or run down? When there is a case of tuberculosis found in a family, a father, mother, brother or sister, all the other members of that family should consider themselves exposed to and probably infected with tuberculosis. If your maid or nurse is found to have tuberculosis all who have been in her presence have been exposed. If you have a friend, neighbor or anyone in whose company you have been for a short or longer time you may have been exposed. You do not know how long they have had their trouble. If you are working in an office or shop or if you are boarding with someone who breaks down with tuberculosis you have been exposed to tuberculosis. Anyone who has ever been exposed should be examined periodically and be on the lookout for tuberculosis in themselves as there is no definite time when one will become sick from the activity after infection has occurred. One may become infected and immediately become sick, or he may harbor the germs in an inactive condition in his body until years later when his health is poor and body resistance lowered by long hours or overwork, insufficient food, exposure or some intercurrent acute disease as measles, pneumonia, influenza, typhoid fever, malaria or other infections and the body loses its power to keep his tuber-

culosis in check. Anyone employing a servant in the home, boarding house, hotel or restaurant should have the servant examined to protect his family and patrons from being exposed to infection.

Symptoms of Disease

Finally, any one who is complaining of loss of weight, loss of strength, lack of energy and endurance, feeling tired and run down, poor appetite, has a cough lasting over three weeks, takes colds easily, has a hemorrhage from the lungs of as much as a teaspoonful of pure blood, has an attack of pleurisy—a sharp pain in the chest made worse on deep breathing or on coughing and lasting one hour or longer—or has fluid removed from his chest, should suspect that he has tuberculosis and be examined so that he can have his disease diagnosed early and thereby be able to take treatment early when he has a chance of getting well. He should be in a sanatorium where he could learn to protect other people and not infect so many of his friends and associates. He should be willing to spend the necessary time on the cure, realizing that he is benefiting himself and protecting others thereby.

Summary

A person with active tuberculosis spreads infection until diagnosis is made and the patient learns to protect other people and gets his trouble arrested or cured.

Early diagnosis and sufficient treatment increases the possibility of arresting or curing, shortens the time required to cure, also shortens the time other people are exposed to a patient while there is danger of his infecting them and keeps him from being lost as a useful citizen.

The North Carolina Sanatorium furnishes free of charge to anyone making a request, bulletins and literature on tuberculosis. It conducts a clinic also free of charge, to those making arrangements in advance every morning, except Sunday, from 8 until 11. If you are interested, in anything that pertains to tuberculosis write The North Carolina Sanatorium, Sanatorium, N. C.

PREVENTING TUBERCULOSIS IN CHILDREN

Preventorium In Cumberland County Cares for Under-nourished and Pre-tuberculous Children of County

By LUCIA FREEMAN, R.N.

(From Sanatorium Sun)

The Cumberland County Preventorium for the treatment of undernourished and pre-tuberculous children, was made a necessity by the findings of the County Tuberculosis Clinic. In these clinics it was found that there were a number of children from the homes of the tuberculous who were classed by the clinic as pre-tuberculous. For these children the doctors advised a rest hour each day, nourishing, well-balanced meals and the correction of physical defects. With the cooperation of specialists, hospitals and the Red Cross the physician's orders for these first pre-tuberculous cases were carried out. Five of the children were boarded out for several months and showed wonderful improvement.

Organize Tuberculosis Association

The Clinic discovered these pre-tuberculous children in need of care and treatment and the problem of their care and treatment showed the need of and led to the organization of a County Tuberculosis Association. The Woman's Club in Fayetteville began the movement for the organization of the County Tuberculosis Association when they invited Dr. P. P. McCain from Sanatorium to talk to them. After Dr. McCain's talk the president of the Club, Mrs. Charles Rankin, said that the health committees of every civic organization would be called together and the need for a County Tuberculosis Association presented to them. This meeting was arranged for and well attended. The Health Chairman decided to call a county meeting at the Court House and a committee was appointed

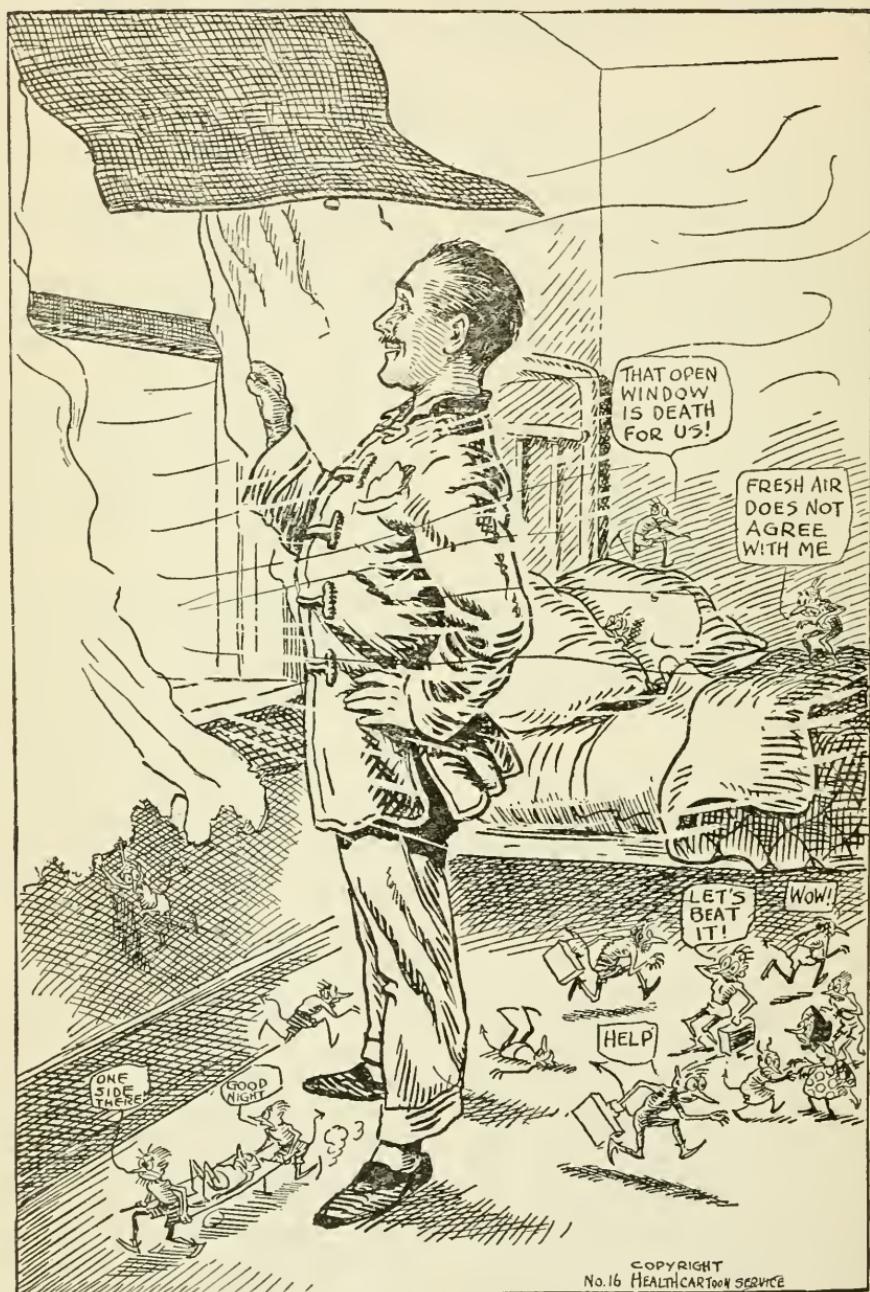
to draft the constitution and by-laws for a County Association. At the meeting in the Court House, which was attended by a representative group of the citizens of the county, the county organization was formed and officers elected.

It was decided at this meeting to put on a county seal sale and to use the money realized from the sale of seals as a nucleus for the work for the undernourished and pre-tuberculous children.

Preventorium is Established

The proceeds of the seal sale net were \$500. With this small amount, a great deal of faith and an earnest desire to do something for our little ones it was decided to open a Preventorium. The need was discussed at a meeting of the County Medical Association and their endorsement granted. Mr. James Gainey, a public spirited citizen, offered his country home of nine rooms, nine miles out in the country from Fayetteville, rent free for the year. The Association accepted this kind offer and before April 1 the home was opened with Mr. and Mrs. James Byrd and daughter, Mary, in charge. Mrs. Leavy Highsmith was appointed chairman of house furnishings and without one penny from the Association the home was furnished. There is a Baptist room, a Methodist room, two Presbyterian rooms, a Hebrew room, a Ladies' Aid room and an Episcopal dining room in the Preventorium. May 1, 1925, National Child Welfare Day, marked the formal opening of our home and several hundred people visited us.

FOR THAT TIRED FEELING



Fresh Air—Take Frequently

Contribute to Support

All local organizations have contributed to the support of the Preventorium. The women's organizations in the smaller churches have sewed, the Parent Teachers' Association gave a towel shower, the school children of Fayetteville and the county gave a pantry shower. The Boy Scouts cleared the ground. The Kiwanis Club staged a frolic for the benefit of the Preventorium and they have supported one child since opening day. The Rotary Club, the Shriners, American Legion, American Legion Auxiliary, Business and Professional Women's Club, Baptist Woman's Missionary Society, Presbyterian Ladies Auxiliary, Methodist Ladies' Aid, Sunday School classes, K. K. K. and Red Cross have all adopted a child for support for a long or short period of time.

How Conducted

The Board of Medical men met and drafted plans and rules for the institution before its opening. The Board of Managers passes on each applicant and supervises the home. Cases admitted to the Preventorium are those referred by the Tuberculosis Clinic, cases exposed to tuberculosis, cases more than ten per cent underweight and slow convalescents from serious illness such as pneumonia, measles and whooping cough. No active tuberculosis cases are kept in the camp.

The children are given a physical examination before admittance and medical inspection on admittance, are immunized against smallpox, diphtheria and typhoid fever. Examinations are made of blood for malaria, a urinalysis is made and an examination for hookworm. Physical examinations are made once each month to check on defects. Children are weighed weekly. A daily check is made on elimination and if necessary a mild laxative given. Temperature is taken in the afternoon daily. At least one quart of milk is given each child. The protective foods, butter, whole grain cereals, fresh vegetables and fruits are served daily. The aim is to have well balanced meals, one or more hot dishes for each meal; food simply prepared with adequate protein, milk and eggs, for growth.

Daily Program

Here is the daily program for the children in the Cumberland County Preventorium:

- Rising bell 7 a. m.
- Breakfast 7:30 a. m.
- Chores.
- Inspection 9 a. m.
- Playtime.
- Morning lunch 10 a. m.
- Milk and crackers or orange.
- Rest 10:15 to 11 a. m.
- Temperature 3 p. m.
- Afternoon lunch 3:30 p. m.
- Milk and Wafers.
- Playtime.
- Supper 5:30 p. m.
- Story Telling, camp fire.
- Bedtime 8 p. m.

Number Cared For

For the year ending December 31, 1925, the Cumberland County Preventorium had cared for 37 children, an average daily attendance of 13. The gain in weight during the average three months stay varied from 4 to 17 pounds. The children at the Preventorium are very happy and call Mrs. Byrd, "Grandma Byrd" from the minute they arrive.

Children Entertained and Weighed

The day after Easter, 1926, the Dillettante Club entertained all the children who had been at the Preventorium with a party at the Health Center in Fayetteville. Twenty-six children returned, every one wanting to go back to "Grandma Byrd" for a stay. The children were weighed and their weight charted and compared with rate of gain and weight on dismissal. The children were examined by two physicians, one the president of the County Tuberculosis Association, the other the examining physician for the Preventorium.

The physicians were very well pleased with the physical condition of all but three children. It was recommended that these three children be returned to the Preventorium. In the case of two the mother was again an active case and unable to care for her little ones.

The other girl had entered the mill to work and was losing weight rapidly. The father in this case is an arrested "T. b." and the family need this child's help. The Young People's League at the Episcopal Church are planning to pay the family this girl's wages so she can take the "cure" before she breaks down.

Entertainment Provided

One Christian Endeavor furnished Christmas for the children, one Young

People's League furnished an Easter Egg Hunt. The Cape Fear Fair Association took the children to the circus.

A New Preventorium

Plans are now being made for a permanent modern building to include a class room and isolation room. Grounds for this building have already been donated at Eureka Springs, Cumberland County, on a very beautiful site.

HOW TO PROTECT CHILDREN FROM RHEUMATISM

Rheumatism in children manifests itself in a variety of ways; as joint pain or muscle pain which may be slight or severe, acute rheumatic fever with redness, swelling and tenderness of the joints; chorea, of which there may be many degrees of severity; and heart disease. It is important to realize that there are differences in rheumatism as it affects the child and the adult. In the child the joint symptoms may be so slight and transient that they are disregarded by the mother and the physician. However, in childhood, regardless of the mildness of the joint symptoms, the incidence of involvement of the heart is high. On the other hand, in adults the joint symptoms are apt to be severe, with a relatively infrequent involvement of the heart. Rheumatic infection is said to be rare under five years of age but it undoubtedly occurs and it is probable that in infancy the heart may be directly attacked without any manifest joint involvement. The important question to bear in mind in caring for children with rheumatic infection is whether or not the rheumatic infection is active and whether or not the heart is attacked. A good principle has been laid down that every child who is the subject of rheumatism, no matter how mild the manifestations, should be regarded as "potentially" the subject of heart disease. In other words, we cannot say, in spite of the most accurate tests, at just what point in the infective process the heart is attacked.

We do not yet know the cause of rheumatic infection nor do we know the cure. Therefore it seems well to speak of protection rather than prevention in

relation to it. Scientific study will, it is hoped, in the near future bring to light the etiological agent which may lead to a method of prevention and cure, but until that time we must use what information we have at hand in the treatment of this disease.

Points to be emphasized in the care of children with rheumatic infections are the importance of frequent examinations; removal of foci of infection; and rest in bed during the active stage of the disease, with a long period of convalescence.

Organized care insures frequent examination. The child who has ever had any evidence of rheumatic infection should make periodic visits to the physician or attend a so-called "cardiac clinic." The frequency of the visits will then be determined by the physician in relation to the condition of the child. The temperature and weight should be recorded. The appetite, hours spent in sleep or at school, and daily rest periods should be carefully considered and advice in regard to them given the mother and child. The child once the subject of rheumatism should be protected from exposure to cold, dampness, infectious diseases and the common cold and treated with more caution than other children. He should wear wool stockings in the winter, should not go out in very severe weather and if he has a very slight cold or fever and complains of slight pains should be kept in bed and the physician or clinic notified. Too much stress cannot be laid on heeding slight warnings of infection or recurrence of infection and there is no such thing as over caution in dealing

with children who have once had rheumatism in any of its forms.

The exact relation that rheumatic infection bears to the tonsils has not been exactly determined but it seems probable that the causative agent gains entrance to the body through the tonsils. A child who has had attacks of rheumatism should be kept in as good general condition as possible. This means a healthy throat with removal of tonsils and adenoids if diseased or causing mechanical obstruction. The teeth also should be regarded as a possible source of danger. It is surprising how frequently "gum boils" or abscesses of the teeth are found on routine examination, with no complaint of pain or discomfort on the part of the child. Carious teeth should be filled to prevent root abscesses. Malocclusion should be corrected to insure proper closure of the mouth and proper mastication of the food.

When anything affects the child's health which the mother does not understand; fever, sore throat, nervousness, pain, or any symptoms, no matter how insignificant, the safest rule to follow invariably is to put the child to bed, keep it quiet there and seek medical advice. The mother who continues to send her child to school until heart failure takes place and weakness, edema, shortness of breath or pain forces the child to bed has disregarded many danger signals. She is more to be blamed, however, if she has ever consulted a physician for she should have been forewarned and if not the physician shares in the responsibility. The importance of regard paid to slight warnings comes out in a striking way in analyzing a large number of histories of children admitted to the hospital with rheumatic heart disease. Those children who enter the hospital desperately ill with rheumatic heart disease and who die from heart failure are undoubtedly those who have had symptoms of rheumatic infection to which no attention has been paid. They have run about and gone to school with rheumatic pains. They have had frequent sore throats and febrile attacks. The heart disease has not been discovered until the heart muscle has broken under the strain of work. Chil-

dren who have been protected in every way may, nevertheless become the victims of heart disease. However, these children undoubtedly do better even though the heart is attacked, and if kept in bed and protected from exposure and strain have a much better chance of recovery from the acute attack. They often regain normal or so-called "functional" capacity for work or play and are not handicapped in their daily activities.

Too much cannot be said for prolonged rest in bed after the active infection or signs of muscle weakness in the heart have subsided. There is a time at which, as Doctor Swift has pointed out, an immunity to the rheumatic infection seems to be acquired. This time varies and is perhaps best determined by the disappearance of fever, slowing of the pulse rate and gain in weight.

Common sense and judgment are more important in dealing with rheumatism than the stethoscope, the electrocardiograph, the X-ray, or any other device. The doctor, nurse and social worker should know the signs of active rheumatism. Due importance should be laid on tonsilitis, rheumatic pains, chorea, or fever, as indications for bed care and for consulting a physician. The subcutaneous fibrous nodule discussed by Doctor Bartlett of New York at the recent Congress of Physicians in this City, has been pointed out by Doctor Swift of the Rockefeller Institute as always an indication of active rheumatism. The nodules are important as concrete evidence of active rheumatic infection. Their relation to active heart disease seems to be close. Chorea, or St. Vitus dance, may also be regarded as evidence of an active rheumatic infection. There are all degrees of severity in Chorea, but there seems to be no relation between the severity of the nervous symptoms and the incidence of involvement of the heart. Chorea is a potential danger to the heart. No child should attend school with chorea, no matter how mild the symptoms. Slight jerkiness, emotional instability, a tendency to drop things, as the knife and fork at table, or to stumble and fall, are as much

an indication for bed care as swollen, red and painful joints.

The care of children who are subjects of rheumatic infection requires vigilance, judgment and caution. It requires the cooperation of the mother and father as well as the patient. It

requires an attempt to forestall damage to the heart. If damage to the heart takes place it requires long rest in bed, periodic examination, and attention to keeping the child in the best possible general condition.

(*Health, Conn.*)

OBEDIENCE

National Committee for Mental Hygiene, New York City.

Do you wish your child would mind every time you speak?

Have you ever stopped to think why he does not?

I. Perhaps you use a wrong method to secure obedience.

1. Are you careful to gain the child's attention before you tell him what to do?

A child who is busy with his play may not know you are talking to him.

2. Do you give many commands without meaning them? The child knows if you do, and soon stops listening to you at all.

3. Do you allow him to do a thing one day and punish him for doing it the next?

If the child does not know what he must expect every time, he is tempted to take a chance this time.

4. Do you promise a reward if the child obeys?

If you have that habit, it is "good business" for him to hold out for a bigger reward.

5. Do you try to scare your child into doing what you want?

Fear makes him "step lively" at first, but either he gets used to the object of terror so that it has no effect (even when for his own safety he should be afraid) or he becomes a timid, nervous child. Do you really want either of these results?

6. Do you make disobedience so interesting by the excitement you stir up over it that any child who loves excitement would want to be disobedient?

7. Do you give commands that it is against nature for a child to obey?

For instance, do you constantly nag a child at the "little wriggler" age with "Keep still!" "Don't make so much noise!?" His nervous system needs activity as much as his body needs

food. How much better to give him a chance to be active in some right way!

II. Perhaps you have not thought enough about what one must do to deserve the honor of a little child's trust and obedience.

1. Do you always keep your promises?

If you were a child, would you trust a person who deceived you? When trust is gone, obedience goes, too, or is given only because the other person is bigger and stronger.

2. Do you show no favoritism among the children, expecting from each according to his ability and giving to each according to his need?

3. Do you keep yourself from giving commands or punishing in anger?

If you are angry, the chances are that the child will be angry, too, and do things he would not do if he were his best self.

4. Do you resist the temptation to make the child obey needless commands for the sake of showing your authority?

A child knows when you are using authority unjustly and rebels against it if he has the self-respect that is normal even in a little child.

5. Do you consider the child's motive in what he does or solely whether the result is inconvenient for you?

A child who makes a mistake trying to help is not naughty just because he happens to break something.

6. Are you careful not to put in your child's way temptations too hard for him to resist at his age?

If you punish him too severely, will he not be tempted to lie to save himself? If you leave things about that a child longs for, is it not too much to expect that he will not take them? Father and mother should help him to do right, not make it easy to do wrong.

Have you thought about why children should obey their parents?

Some parents obey their children.

Such children are apt to grow up to think the world is going to give them everything they want. When they learn differently, it is bitterly hard for them. Some never learn, and in taking what they want, become the people whom the law has to take in charge.

Some children obey their parents too well.

They are not allowed to think for themselves at all and grow up to be

helpless men and women who always need some one to tell them what to do.

Is it not a far better thing to teach children to obey the right? For a while they must trust you to tell them what the right is (and you must be very sure that your commands are right and fair and for the child's real good), but as they grow older they ought, each year, to be better able to know what is right for themselves.

Are you giving your children that right? (Public Health, Mich.)

HYGEIA—MAY, 1926

Hygeia is published under the direction of the American Medical Association, and its purpose is to disseminate information about matters of health. The following reviews are of articles appearing in the current issue.—(Editor.)

Output is Greater When Factory Hands Drink Milk

Sauce for the gosling is sauce for the gander.

Since school children have been found to thrive and gain weight and do more efficient work when they have a mid-morning lunch of milk, many factories and several business firms have tried the same plan for the adults in their employ. The results have been most encouraging.

The workers no longer get hungry in the middle of the morning, slow down in their work and watch the clock; nor do they sneak down the fire escape for soda water. They use less tobacco, the working day seems shorter, and the work is more efficiently done. Greater productiveness and less sickness are results that will appeal to the executives, even if the altruistic motive of promoting greater happiness through greater health fails to touch them.

Why Cod Liver Oil is Recommended For Baby

Almost every one knows that cod liver oil should be given to babies to prevent rickets and insure proper growth of the bones. However, the question of which cod liver oil to give is perplexing many.

Investigation has shown that Norwegian oil is no better than the oils from Newfoundland. Oils from the livers of such fish as pollock and haddock contain as much of the vitamins as oils from cod liver.

Vitamins have not yet been isolated in pure form. The codfish get their vitamins from the smaller fish they eat, which in turn get it from another sea growth, the plankton, whose diet consists of microscopic bodies which have the ability to create vitamins.

Specialist Tells Method of Taking Cinder from Eye

Don't rub your eye when you get a cinder in it. It may feel better if it is rubbed, but the cinder is apt to be worked deeper into the tissues of the eye, and it will be much more difficult to get it out.

The cinder may lodge on the conjunctiva, the delicate membrane lining the inside of the lids, or it may stick to the tissue covering the front of the eyeball called the cornea. In the latter case, its removal is difficult and should not be attempted by any one except a physician. There is great danger of infection entering through the hole made on the cornea by the cinder, which may result in impaired vision or even loss of the eye. Therefore the only

thing to do is to see a physician immediately, if the cinder is on the cornea.

If the cinder is on the conjunctiva, there are a number of things which may be tried. First of all, wink the eye. This will start a flow of tears that will probably flush out the cinder. If this is not successful, grasp the lashes of the upper lid between thumb and finger and pull the lid out and downward as far as possible, then let go. The lashes of the lower lid sweeping across the upper lid may brush out the cinder.

It may be necessary to put a drop of heavy oil, such as mineral or castor oil, into the eye. The heavy oil may be more successful in washing out the cinder than the tears were. As a last resort, one may turn the upper lid and remove the cinder with a bit of very clean cotton or linen.

Surgery is Only Remedy Known for Eye Cataract

A surgical operation is the only known remedy for cataract of the eye.

Cataract is a clouding of the crystalline lens of the eye, and consists, so far as is known, of a withdrawal of water from the lens fibers and the formation of spaces between the fibers. Later the fibers themselves degenerate and become opaque, and there is no known process by which their transparency can be restored.

In an operation the lens is removed, after which the patient must wear thick convex lenses in order to see well.

Because the opaque spots that are formed in cataract are located in different places, the vision may vary from day to day. As a result, the patient will think there is some improvement, due perhaps, to some medicine. Careful tests, however, show that such is never the case.

Expectant Mother Needs Examination By Doctor

In order to have better babies, we must have healthier parents. Especially important is the health and care of the mother both for her own sake and the child's. Every woman who is about to have a baby should be examined by a

physician, and should remain under his care until after the child is born, advises Dr. Frank W. Lynch.

A physical examination will show the condition of the prospective mother, and if there are any defects, they may be corrected at once, thus insuring an easy, safe delivery.

Proper prenatal care will very greatly reduce the number of deaths from childbirth and will insure better health of the children. During the first part of this prenatal period the patient is depressed and tired. She may have nausea and vomiting, especially in the morning. This condition can be helped by her physician, another reason for consulting him early.

For the last half of the time the woman will feel very much better. This is generally noticeable in her improved appearance and endurance. One cannot overemphasize the need of consulting a physician promptly, at the first signs, and of following his directions faithfully.

Both Detachment and Attachment Need of Parents

Parents need detachment as well as attachment in training their children, thinks Dr. Arnold Gesell of the Yale Psycho-Clinic, who writes on "The Delicate Task of Child Training."

Parents too often allow their children to upset the entire household over some matter of discipline. The parent takes an autocratic attitude, which produces resentment on the child's part. Affection and antagonism grow side by side. There should be no emotional display on the parents' part. Anger, coaxing, tears gain nothing.

Many parents are surprised to find their difficult child successfully handled by a teacher. A calm, detached attitude will bring results in improved behavior that can never be achieved by pleading and threats.

Regardless of the pleasure it may give her, the wise mother will not allow her child to become too dependent on her. Parent and child should act as partners, or the child will never acquire the self-confidence he needs to help him through life. Child training should begin in infancy.

Names Foods That Help to Build Strong Teeth

The condition of one's teeth depends on the amount of calcium in the diet during childhood and in the diet of the mother before birth. The teeth are formed chiefly of calcium.

Recent tests have been made with different diets. As a result, it has been found that milk, egg yolk, butter, animal and fish fats, especially cod liver oil, bring about the formation of good teeth, while cereals, when not eaten with vitamin foods and cod liver oil, do not give enough calcium to the teeth, so that they are likely to decay.

New Method Discovered of Detecting Deafness

A new method of detecting deafness among school children is commented on in an editorial. One advantage of this new method is that it makes possible the examination of hundreds of children in a few days. It is simple.

Each child is asked to set down on a piece of paper the number that is pronounced by the apparatus, which is a phonograph the intensity of whose sounds can be delicately regulated. The number is pronounced first in a loud tone, then in gradually lower tones. When the pupil can no longer distinguish the number spoken, he stops making entries. The test is repeated four times to avoid errors.

When the sheets are examined, it is possible to tell at a glance whether a particular child is able to hear sounds audible to one with normal hearing.

Cancer May Recur Within Three Years after Surgery

Cancer may recur any time within three years after removal of the growth. Therefore the patient should be examined by the physician regularly for the first three years. Any undue symptoms should be reported to him at once.

Early recurrences are not always accompanied by pain, but develop along the line of the scar as nodules and in the axilla as enlarged glands. A general loss of strength and weight are further symptoms.

Many Cleansing Powders Contain Lye; Dangerous

Lye, used as a household cleanser and washing powder, is a fatal poison and should be labeled as such. Congress is considering legislation to regulate the labeling and sale of lye and similar poisonous caustics.

Thirteen states have already passed such legislation, but there is need of national legislation to protect children and adults. Lye is not only a fatal poison, but will badly burn any skin with which it comes in contact.

Tells Women to Boycott all Hair Dyes

Did you ever know a callow blond youth who dyed his hair a Valentino black to please the girl he was courting, or the girl whose red hair was not natural but acquired? Of course, everyone is familiar with the peroxide blonde. The use and danger of hair dyes is told by Frederic Damrau.

Peroxide and henna, the grandmother of the dyes, are only harmful in that they dry the hair. However dyes containing lead, and many of them do although there is no mention of it on the label, and the anilin dyes which give that glossy, jet black color are poisonous. They often cause skin inflammations, disturbances of stomach and bowels, anemia and paralysis.

Even henna dyes may contain some of these harmful substances. Therefore, aside from the artistic standpoint, their use is to be discouraged on health grounds.

What to do to Keep Eyes in Good Shape

Ordinarily, nothing need be done to keep the eyes in a healthy condition. There is an automatic process by which the eyes are kept clean.

Occasionally, however, on account of the amount of dirt blowing on our city streets, it may be well to wash the eyes. For this purpose use an eyecup and a solution made by dissolving a teaspoonful of table salt, a teaspoonful of soda, a teaspoonful of boric acid and a tablespoonful of glycerin in a quart of boiled water. This is as good as any of the lotions on the market.

In case of a disease condition, a physician must be consulted, as the various eyedrops sold are worthless. Falling lashes are usually due to a disease and can be cured. If treatment is not delayed, the lashes will grow in again.

Plucking the eyebrows has no effect on the eyes. Mascara is harmless, if one can apply it without getting any into the eye. If it does get in, it acts like a cinder. Beading the lashes with a hot preparation is dangerous, as the hot ointment can spatter onto the cornea and cause scarring. This might interfere seriously with the vision.

Should Remove Moles only When Source of Irritation

Moles should not be removed unless there is a good reason for doing so, such as location in a spot where there is constant irritation by clothing or comb.

The cause of the growth of moles is not known. There is no ointment that will safely remove them. If it is necessary to have them removed, it should be done by a physician. Then the danger of cancer starting as a result of the removal will be greatly lessened.

Suggestions for Care of Home Sickroom

Cleanliness, ventilation and sunshine are essential in the care of a sickroom, points out Mrs. Norma Selbert. In cleaning the room the damp method should be used. Noise and unnecessary motion should be eliminated, and the patient's well-being and comfort should be considered above all.

All the utensils used for the patient must be sterilized by washing in soapy water and either boiling, sunning or immersing in a disinfectant. Rubber articles need special care to preserve them. Flowers and plants must be kept fresh; water on flowers should be changed daily. Dead plants and flowers have no place in the sickroom. Neither have animals, as they may carry germs, parasites and dirt.

A basin of a disinfectant should be kept in the sickroom for washing the hands after touching the patient or his things.

Neighborhood Games Best for Children

Basketball and football have taken the place of run sheep run and prisoner's base, with great loss to small boys and girls, thinks Prof. James Edwards Rogers of Chicago Normal College, who writes on "The Lost Art of Play."

The simpler games are better fitted to the physical ability and needs of a child between 6 and 11 years. Furthermore, these old neighborhood games develop competition, teamwork and co-ordination. Prisoner's base is good football practice.

These simple games foster a spirit of play, rather than a spirit of winning. They are good fun. In this age of commercialized amusements and organized sports, they should be encouraged. They will keep the child from becoming sophisticated and unable to amuse himself.

That they have fallen into disuse is due to two conditions. One of these is the publicity and importance given to organized sports and the other is the increasing danger of playing on sidewalks and streets. The playgrounds should give more time to the low organized games and less to league baseball and football, thinks Dr. Rogers.

Flapper Needs Friend to Help, not to Blame

Never appear shocked at what the flapper does; that is, if you want to help her.

In order successfully to guide the flapper through the difficult years of adolescence, parents and teachers must know and understand her, and not take the attitude of unsympathetic and shocked critic. A tolerant, unprejudiced spirit and a knowledge that goes back to her childhood are needed by her elders, says Dr. Marianna Taylor of Boston.

While the flapper is a thoughtless pleasure seeker with scant reverence for parents, religion or convention, she is not bad at heart. Beneath the powder and paint and antisocial attitude, often only a pose itself, one finds material

for a fine character. She is really searching for truth and knowledge about everything, though her methods are bungling and primitive.

Fair dealing and frankness will win her confidence, which must be won if

she is to receive any help or guidance from parent or teacher. The flapper must be taught that everything in life has a price and must be paid for. She should be given help and sympathy to get her values and loyalties clear.

TONSIL AND ADENOID CLINICS

About two thousand school children who are handicapped by diseased tonsils and adenoids will be given relief through operations in emergency hospitals operated by the State Board of Health during the next four months.

The first clinic of this season was held at Windsor, in Bertie County, on Tuesday, May 18th, continuing for four days. One hundred children received needed operations.

The clinics will be continued probably through September. Eleven have been definitely scheduled as follows:

Bertie County at Windsor, May 18th; Martin County at Williamston, May 25th; Stokes County at Danbury, June 1st; Ashe County at Jefferson, June 8th; Alleghany County at Sparta, June 15th; Watauga County at Boone, June 22nd; Avery County at Newland, June 29th; Mitchell County at Bakersville, July 6th; Yancey County at Burnsville, July 13th; Madison County at Marshall, July 20th; Alexander County at Taylorsville, July 27th.

The series of clinics beginning this week marks the beginning of the eighth year of this particular piece of public health work. The plan was originated

by Doctor G. M. Cooper, now Acting State Health Officer, and first tried out in 1919. A complete emergency hospital is set up in school, church, or fraternal hall, with a corps of eight nurses, an anæsthetist, a specialist as operator and an orderly. A nominal fee is charged when the parents of the child is able to pay, otherwise the operation is performed free. The children are taken care of over night in the hospital, with the best of medical and nursing service constantly available.

During the past eight years a total of 12,195 children have been operated upon successfully. No phase of the work of the Board has proved so popular as this, which makes available the opportunity for remedying defects seriously affecting the physical condition of the children and handicapping their progress in school.

The anæsthetist this year with the hospital unit is Doctor Lois Boyd Gaw, assistant physician at the North Carolina College for Women at Greensboro. The specialists performing the operations are secured from the profession in territory adjacent to the clinic points.

THE TRAGEDY OF CASTILE

THURMAN B. RICE, M.D.

Bulletin, Indiana State Board of Health

When in the eighth century the Saracens swept like a wave over Spain, the mountains of the northwest corner of the peninsula afforded a refuge for the most resolute of the Christian chiefs who refused to submit their necks to the Moslem yoke. Gradually the brave knights of the Christian faith pushed back the followers of Mohammed toward the land from which they had come and eventually set up several little Christian states—the proud kingdoms of Castile, of Aragon, and of

Navarre. But the proudest of them was Castile. The very name of this brave and warlike state is haughty, meaning as it does "a line of castles,"—a line of castles guarding the sacred tenets of Christianity from the hated Moslem.

For centuries these states incessantly fought their common enemy the Mohammedans, and sad to relate they also fought among themselves. At last with the marriage of Proud Isabella of Castile and Ferdinand of Aragon these two little provinces united their forces

and started the Spanish conquest of the world. In this union was born the nucleus of Spain, the grandest empire of the early days of modern history, the very first nation to boast that the sun never set on its flag. Those were glorious days for Castile the Proud. Ferdinand and Isabella made war upon the Saracen in real earnest,—the conquest of Granada and the expulsion of the Moors from Spain soon followed. The discovery of America by men in Spanish ships, and then the attempt on the part of Spain to claim as her own practically the entire New World is an old story. Then followed wars of conquest, wars, wars, and still more wars. The bravest Spaniards were in armor in every part of the world; the most learned and devout Spaniards were going as Jesuit priests to Christianize the natives of America, the Philippines, and every other outlandish nook and corner of the earth. Spain waxed rich and powerful; she dominated the earth. Proud days for Spain and Castile! No other men so brave, and no other women so beautiful as those of sunny Spain, the Mistress of the world! Art, poetry, music, and romance flourished in this the golden age of the Castilian civilization.

But that was four hundred years ago, and times have sadly changed. What of Castile today? We remember that the Spanish-American war was a farce. Spain has lost all of her far-flung possessions save a few in North Africa which she cannot hold. She has lost her position as the spiritual leader of the world and is now considered to be a particularly sinful nation. She is bankrupt financially, mentally, religiously, biologically and indeed in every way. She is but the shadow of her former self. Why?

It is said that on one occasion a proud and arrogant knight when asked his origin threw out his chest and haughtily informed all concerned "I come from Castile where they make men and WASTE them," the implication being that they made so many men that they could afford to waste them. But can any nation afford to waste its men—its real he-men, its best seed? Today as a result of the waste-

fulness of the golden age Castile is noted not for MEN but for SOAP. Soap so mild that the doctors advise it for babies' baths because it has no bite. Oh! Ghastly trick of fate! To have fallen in the short space of four hundred years from the estate of being the maker of men to become the maker of soap. Truly enough, "*decensu averno facile est.*"

But what could she expect? She wasted her best blood in countless wars; she made celibates of her most noble, intelligent and devout men and women by making priests and nuns of them. She left the runts and renegades at home to breed the race. She thought the immediate present so important that no attention was paid to the future. She allowed the all important function of reproducing a race capable of carrying on the torch to be forgotten in the excitement of war, and the laudable but premature plan for the Christianizing of the world. In the making of soldiers she lost the art of making men, and so now she makes soap,—soap with which to bathe the babies of sturdier men.

A nation or a family or a race need not expect to remain great if she kills off her best stock and turns the breeding of the race over to the nits-wits and ne'er-do-wells. Castile forgot and our own proud land is forgetting that there is room in oblivion for every one, and even for the proudest nation. We do not often engage in disastrous and bloody wars but we are allowing the poorest stock to reproduce itself without let or hindrance while our families of good stock rarely have the four children which are necessary if such families as a group are to increase in numbers.

The average number of children when both parents are feeble-minded is 7.5, whereas in the thrifty, independent and valuable families the number is scarcely if at all more than 2. Perhaps it doesn't matter what manner of parents or what manner of home a boy or girl has; perhaps an oak can grow from a squash seed, tho personally I still believe that oaks produce acorns and acorns grow into trees. When I begin seeing figs on thistles I am going to get

my glasses changed, or change boot-leggers, or do something about it. Beyond doubt this country was originally endowed with one of the most magnificent human stocks that the history of the world has seen. But we have allowed it to mix with every race under heaven; we have introduced such a hodge-podge of blood, and customs and creeds, and languages that we are scarcely able to understand one another and are unable to act as a unit as may the peoples of less heterogeneous racial composition; we have fostered the inferior elements and made them extraordinarily productive in numbers; our best stock we have rewarded with honor, fame and fortune, but it has failed to propagate itself. We have wasted our seed; we have believed that merchandise and bonds can replace seed and blood; that rich bank stock can compensate for poor human stock; that books, universities, and art museums can inspire a dull mind to action and that the story of a glorious past can lead a dullard to noble deeds. Alas! it is not true.

One system of philosophy or another may flourish or fall, it matters little; we may or may not believe in evolution, and it matters not at all; our democratic, or republican, or autocratic, or plutocratic government, whichever it may be may stand or fall; our standards of morals may change, as indeed they are rapidly changing to the dismay of many; even our religion may assume new forms, but all will be well if the quality of life remains sound. If children capable of becoming strong, well-poised men and women are being born to take up the problems of tomorrow we need have no fear of the future. But if the quality of life shall fail, neither universities nor symphony orchestras, nor cathedrals, nor philanthropic endowments nor economic prosperity, nor battleships, nor armies, nor anything else can save a nation.

Mother Nature has very definite laws,—and one of them is to the effect that a race or species must breed from its best or it must perish. If we disregard or disobey this law which altereth not, she will spank us—even us 100 per cent Americans—and put us to bed—or possibly she will set us to making soap.

TRIED THE "MADSTONE"

A pet dog in the Hamrick family in Cleveland County bit seven members of the family, including the baby. Only one member of the household was spared. Then the dog bit five persons in two other families. About that time it occurred to somebody that the pet might be mad. It was killed and the examination disclosed rabies. A "mad rock," better known as a madstone, was secured and applied, the *Shelby Star* says, but it didn't adhere and all twelve are taking Pasteur treatment. It is fortunate the madstone didn't adhere, if there was any purpose to depend on that. This is the first instance of the use of the madstone mentioned in North Carolina in a long time. This substance, which is always described as having been found in the stomach of a deer in the dim and distant past, was formerly a popular remedy for mad dog bites in North Carolina. One owned by a Charlotte man was much in use for a long time. Of course the madstone had about as much virtue as a poultice of weeds, but if they believed it would help, had faith, they sometimes thought they were cured; and if they were cured by the application of the madstone that was evidence of the absence of rabies. But with the advance of enlightenment and the discovery of the Pasteur treatment, the madstone disappeared from view, just as other superstitions have disappeared the same way.—*Statesville Landmark*.

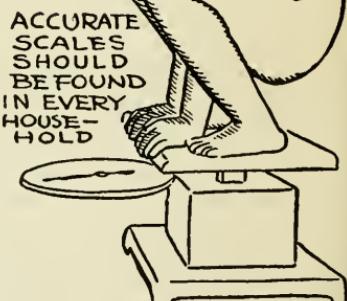
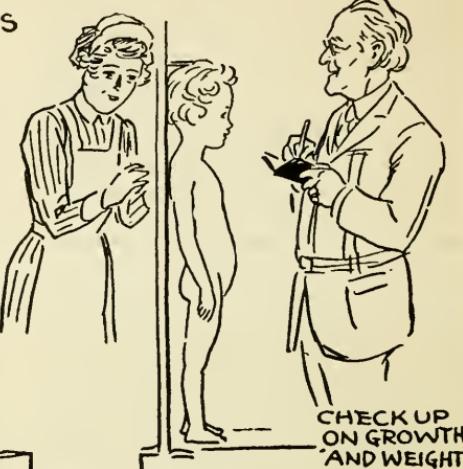
In a series of 10,636 cases of smallpox in which it was possible to obtain dependable data regarding vaccination, it was found that 9,660 had never been vaccinated and of the remaining 751 cases all had been vaccinated from seven to fifty years previously.

Frequent vaccinations for smallpox will replenish the waning immunity without again causing a sore arm. By waiting so long that immunity is all lost re-vaccination will cause a sore arm just as it did the first time.

All children should be vaccinated for smallpox in early infancy, again before they start to school and thereafter throughout life each five years.

SAFEGUARD YOUR CHILD'S HEALTH

FREQUENT MOUTH AND
THROAT EXAMINATIONS
PREVENT DISEASE



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NO 28 —

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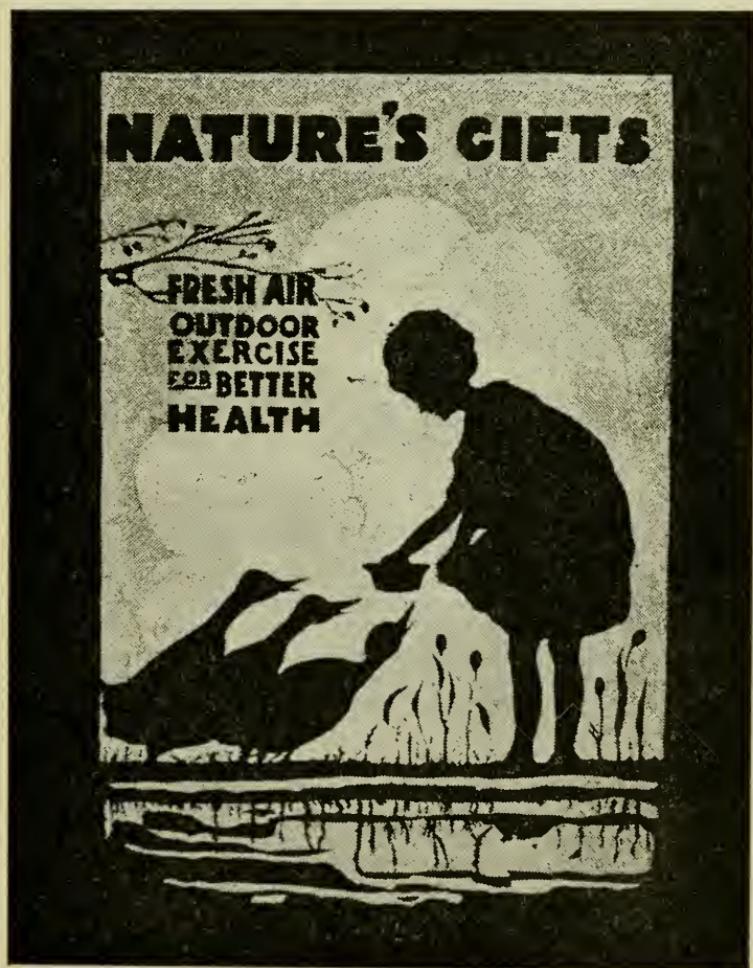
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Poster by William Gillies of Frankford High School, Philadelphia, awarded seventh prize in contest conducted by Hygeia.

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
Cancer	German Measles	Scarlet Fever
Catarrh	Hookworm Disease	Smallpox
Care of the Baby	Infantile Paralysis	Teeth
Constipation	Indigestion	Tuberculosis
Colds	Influenza	Tuberculosis Placards
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Diphtheria	Pellagra	Venerel Diseases
Don't Spit Placards	Public Health Laws	Water Supplies
Eyes	Prenatal Care	Whooping Cough
Flies		

FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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GET THE CHILDREN READY FOR SCHOOL

Many wise parents are now taking time by the forelock and are getting their children prepared during the summer vacation for entering school this fall.

Good health makes education much easier for both pupil and teacher. If your child has felt that school is a drudge and if he has failed to accomplish all in school that should have been accomplished, the chances are nine to one that the reason is because of some physical handicap. Now, during the vacation, is the time to take that child to a physician for a thorough physical examination that correction of defects may be made while yet there is plenty of time for him to build up his physical strength before school begins.

We have heard much about the retardation of children in school because of infected tonsils and adenoids. These conditions do impede the child's progress in school much more than we are often willing to admit. So, also, do infected teeth act as a definite poison which causes all sorts of complaints. Perhaps the child is stunted because of not having received the proper nourishment. Children are not undernourished so often because of insufficient food as because of improper food. Then again it happens very frequently that the child fails to make satisfactory progress because some easily corrected defect of the eyes has prevented that child from seeing as normal children see.

We are all exceedingly free to condemn our school board if they employ a teacher who is not thoroughly qualified to carry the tremendous

responsibility of teaching our children right. And this is as it should be. The teachers of the state are in great measure responsible for the future citizenship of the state. The average life of the school teacher is short. Many teachers are leaving this profession each year to take up other duties and their places must be filled. There are probably about three thousand new teachers employed each year and with all the care there must be some who enter the work who are unfitted either by natural disposition or training to teach. School boards are very careful in their choosing. Each new recruit is made to pass very exacting tests and examinations.

But what can the best teacher in the world do for a child who is physically unable to keep up with his class? With all of the care to choose good teachers there is far too little care in preparing the children for entering school. By using the same degree of care in preparing all children to enter school that is used in selecting teachers nearly all of the failures to make grades would be eliminated. Each parent makes a sacrifice to send children to school and the state spends millions each year to maintain its public school system. About one-fifth of this sacrifice and expense is wasted by the children failing to make grades. Most of this failure to make grades is because the children are not prepared. Why wait until school begins for a physical examination of the little tots who this fall will enter school? Such defects as they may have may now be corrected and thus avoid interruptions when they should be making

progress. Arrange at once for your child to have a thorough physical examination. Ask your doctor each of the following questions:

Is my child up to standard in weight and height for his age?

Are there any tonsils or adenoids that can cause trouble?

Are all the teeth in good condition.

Is the vision and hearing correct?

Do the stools show any hookworm ova?

Are the muscles firm and skin clear?

Are there any physical defects or deformities that can be corrected?

Is the food my child habitually eats the proper kind for healthy growth, and is he getting the proper amounts?

Is my child in the best possible physical condition to profit most from going to school?

There may be other questions to be answered in each individual case but in no case should there be any doubt about all of the above questions.

The child is not getting a square deal if he is sent to school with a handicap.

Now is the time to act.

FEAR

Children may, while yet very young, acquire their mother's fears but it is not probable that the newborn baby knows any form of fear. Little birds and little chickens when first hatched, and in fact the young of any animal, may be picked up without trying to move away. Very soon, however, they will do just what their mother does. If the mother is a pet cat or a pet hen the kittens or the chickens will never know fear. The little birds at the time they leave the nest, the chickens of a wild hen or the kittens of a fearful cat will be as hard to catch as their mothers.

Parents are often responsible for implanting dangerous fears in their children. It is right and proper for children to be taught to be afraid of dangerous things but very unfortunate if they are taught to be afraid of things they should not be afraid of. How often one hears the remark made by highly intelligent people, "I have always been afraid of such and such thing. I know it is perfectly silly of me but I can't help it." That fear was implanted in the child by an unthinking mother or nurse before the child was old enough to remember how the fear was acquired, and that person continues through life enduring an unreasonable fear. Some persons are able to mostly overcome these foolish fears after they are old

enough to understand and see how foolish they are but many are not.

It is especially reprehensible to threaten children with bogey men, policemen, doctors and dentists. These are really dangerous fears for when there comes a time when doctors, dentists or policemen are needed to help the child, an almost unsurmountable fear stands in the way. So also there are a great many other fears that hinder people in life from doing the things that would enable them to succeed. A certain degree of aggressiveness is essential to success and how can a child learn to be aggressive if every time he turns around he meets a "Don't do that"? If he talks he is told to keep quiet, if he runs and plays he is told to be still. Because experience is the most effective teacher such children sometimes learn to be deceitful. When bubbling over activity leads them to do things, it is natural for a child to do and the don'ts are emphasized with slaps or other punishment the child learns to conceal the truth. The child may know that if he tells a lie and it is found out he will be punished, but when he has made a mistake for which he knows he will be punished if he tells about it he takes a chance on telling a lie, hoping it will not be found out.

Fear of truthfulness has probably been the cause of the first steps on

the road to crime in more cases than any of us realize. Many mothers wonder "Why did my child go wrong, when I was always so very careful?" Many mothers' hearts would break if they realized that the child went wrong because it was afraid of her. Yet that is the truth, it was more afraid of her than of the things about which she was most careful.

In the aggregate, it is fear perhaps that rules our lives. Many fears are essential, and it is not always easy to separate the dangerous from the essential. The little child should be prevented from playing alone in water where it might be drowned but if fear of the water is so implanted in that child that it can never learn to swim, then that fear may cause the loss of a life rather than save it. To a certain degree, teaching the child to fear water was all right but beyond that degree it becomes dangerous.

People are not all alike and fears that paralyze some people are only tonics for others. Some people enjoy performing, or seeing others perform, a hazardous feat because it gives them a thrill. Yet there would be no thrill if there was not an element of fear. Not the fear that paralyzes but the fear that is a tonic. It is this sort of fear that makes gambling for some an obsession.

As essential as it may be to implant certain fears and avoid implanting other fears in the child mind it is not an easy matter to do. The mother who possesses unwholesome fears can scarcely keep from imparting these fears to her children. Only by persistently reasoning herself out of that fear may the child escape. If she still retains it the child will see and imitate it. This is one of the responsibilities of being a parent and there are many others of less importance.

INFANT FEEDING SIMPLIFIED

By FRANK HOWARD RICHARDSON, M.D.

(Address at a meeting of Medical Society, Rochester, N. Y.)

Feeding most babies is a comparatively easy matter, and yet, infant feeding has come to possess the reputation of being one of the most difficult and mysterious problems in the whole practice of medicine. Is it possible for any physician to feed the great majority of the babies in his practice? Absolutely so. Is it a matter of skillfully choosing one particular formula which alone will suit the needs of each individual baby? Absolutely not. Is the acquisition of such skill a question of long and patient study, to be followed only by those who desire to specialize in pediatrics? By no means. Is it the duty of every physician who treats babies at all to make himself familiar with a simple technique by which he can make the feeding of the vast majority of these babies a matter of certainty in his hands? By all means.

And yet infant feeding has been notoriously a subject whose discussion could kill the interest of any medical society meeting, because of the wrangling and the acrimonious discussion to which it usually gave rise. Perhaps a hasty survey of its history in recent decades may throw some light upon the reason for this state of affairs.—as well as for a way out.

About the middle of the past century, Biedert and Meigs, in Philadelphia, conceived the excellent idea of approximating cow's milk chemically and physically to mother's milk, and so making artificial or substitute feeding of babies as easy and as successful as maternal nursing. Possibly because of the fact that the babies did not understand chemistry, the result was not highly gratifying; and the mortality of artificially fed babies continued appallingly high. Next, in

the latter quarter of the century just past, Rotch and his followers elaborated a new system of feeding based upon an equally attractive hypothesis. This was that as mother's milk and the baby's needs were constantly changing, a highly flexible system for changing the composition of the milk was indispensable. Hence, the percentage feeding theory, under which many of us here "learned" infant feeding! This allowed the use of an unlimited amount of mathematical calculation, with resulting milk modifications that were understood only by the individual milk modifier and the Deity. The fact that as the baby was not allowed to share in this knowledge, may have accounted for the unsatisfactoriness of this supposed "advance." Next, in the first decade of the present century, came "caloric feeding," from Germany via the middle west. This was not a method of determining *what* to give a baby; but simply a means of determining *how much*. Along with this, however, came a renaissance of the old idea that simple dilutions of whole milk, when boiled, with a small amount of sugar added, make pretty good food for babies. This boiling, by the way, undoubtedly makes any milk mixtures more readily digestible, owing to the fact that it renders the curd resulting from digestion much smaller than it would otherwise be. It thus does away with the need for adding lime water, cereal diluents, citrates, or any other of the many expedients for making the curd smaller, that have been the main "raison d'etre" of most of the various feeding concoctions. The addition of a little orange juice took away the danger of scurvy that would otherwise have existed in this boiled milk diet.

All this time, the clean milk movement, notably the Certified Milk agitation started during the eighties by Dr. Coit and Mr. Francisco, and crystallized in the formation of the Essex County Medical Milk Commission, had been doing wonderful things for the lowering of infant mortality in the hands of those doc-

tors who had begun to get a vision of the simple fact that dirty milk might kill babies, no matter how "scientifically" it was treated after it had once become contaminated. To this day, the doctors who insist upon their babies having clean milk, whatever they do with it after they get it, naturally will have better results than those who feel that a little boiling or a little pasteurization can make stale, dirty milk the nutritive equal of fresh, clean milk.

The greatest advance of all, however, was that started by Sedgwick toward the beginning of this century, when he inaugurated the "back to the breast" movement, and demonstrated quite clearly to whomsoever would come and see his work, that any mother could nurse her baby, if her doctor would master a comparatively simple technique, and would cooperate with her in applying it. This technique consisted in two basic principles: first, the complete emptying of the breast at every feeding period; second, the supplying of any deficiency in quantity at any feeding by providing a complementary or completing feeding of artificial or substitute food. This is the greatest advance that has taken place in the feeding of babies in modern times; and the significance of it, when once it is grasped by the rank and file of the medical profession, will result in a wonderful lowering in infant mortality, as well as a marvelous simplification of the problem of supplying babies with the food essential to their continued existence.

Let no tyro at the art of infant feeding think for a moment that there remain no scientific problems to be solved by the man who prefers this method of infant feeding, to the pursuit of the will-o'-the-wisp feeding fads that have been interspersed among the main feeding fashions hastily sketched in the earlier portion of this talk. B. B. Culture, B. A. Culture, Malt Soup, the patent and proprietary foods, S. M. A., lactic acid and karo corn syrup, sour milk, protein milk, and a score of changing and shifting food fads, continue to

appear and gain the attention of the medical profession from year to year. But the man who chooses to study the baby himself and the product of the mother's breast, together with methods for making the latter sufficient for the former and the former adequate for obtaining the latter, is advancing steadily toward the goal of real knowledge; whereas the man who is content either to tax his ingenuity with the devising of strange and bizarre concoctions, or to follow the lead of some pediatric originator, is "advancing" in a circle, as far as making any real progress is concerned.

Successful infant feeding by this new-old method, then, is predicated upon a careful observation of the interaction between nursing baby and secreting breast. The hardest task is the overcoming of the baby's occasional or frequent reluctance to empty the breast. When he will not do this, the mother must herself complete his unfinished task, by the simple operation known as "manual expression." This consists in approximating the ball of the index finger to the ball of the thumb, at about the free border of the pigmented areola, through the tissue of the breast, at the same time pulling forward a little, with a milking motion. When this is correctly done, the milk should spurt out in jets from three to six feet in length. The knack can be taught the mother in a few seconds, provided the doctor himself has learned it.

The only rule in offering the artificial feedings that constitute the complementary feedings, is to give the baby as much as he will take of any food that the physician believes to be suitable for a child of about the given age. As good a feeding as any, perhaps, is a half and half mixture of milk and water, boiled together for three minutes, and sweetened with dextri-maltose in the proportion of two level tablespoonfuls to the pint of the mixture. After the baby is two or three months old, this may be changed to one-third water and two-thirds milk, with three

level tablespoonfuls of dextri-maltose to the pint. Loose stools call for less dextri-maltose; constipated stools more. Five or six ounces may be offered the baby; but it must be understood that if he empties the bottles of the quantity given more must be offered him. In other words, no one but the baby himself must decide as to the amount necessary, which will vary from time to time, quite as it does with us adults. The baby will not overeat, in spite of the teachings that were forced upon us in our medical college days. The only way to explain the large quantities that some of these previously "colicky" babies will get away with, (with a consequent complete cure of the baffling "colic,"—which of course was nothing more nor less than hunger) is to realize that the active peristalsis of the hungry stomach hurries much of the food out of the pyloric opening with almost as much speed as that with which it enters the cardiac!

Nor is colic the only bugbear of the young baby that disappears when this rational treatment is instituted. Constipation likewise is done away with; for the baby whose constipation was the result of insufficient food, as is so often the case, needs not cathartics, but food! Vomiting too ceases to be the dread symptom that it once was, if one will but realize that in the hungry baby, peristalsis can easily reverse itself, without any of the serious causes or the unpleasant circumstances that characterize it in the adult. The baby who vomits because of his hunger, and then cries because he is back where he was when he started, needs more food—not calomel, castor oil, and diluted or withheld nourishment for twenty-four hours!

What keeps a baby from nursing? If we only knew, in all cases, much of the difficulty of infant feeding would vanish. Some of the things are: overdressing, which renders intolerable the hard physical exercise that nursing involves on the part of the baby; a bubble of air in the stomach which can best be removed by holding the baby up over the

mother's shoulder, as many mothers have learned to do by experience; a stool low down in the rectum; which may easily be evacuated by the use of the soap stick suppository, a bladder distended with urine, which may be relieved by the same means; and a hundred other causes that must be studied by the doctor, the nurse, and the mother.

In fine, the feeding of babies may be successfully practiced, with certainty and assurance, by any medi-

cal practitioner who will give his time, his thought, and his honest efforts to growing babies, just as he would grow any other living creatures, whether animal or vegetable. He needs common sense, observation, patience, and a willingness to learn from all sources, including the baby and the baby's mother. They will constitute the greater part of his literature, on this much over-written-about subject!

TO LIVE LONGER AND BETTER

That modern man is on the threshold of a new era of improved community health, was the promise held forth by Sir Arthur Newsholme, former chief medical officer of England and Wales, who has just returned from a tour of inspection of demonstrations in public health administration in New York State and elsewhere in the United States.

Dr. Newsholme is one of the world's leading contemporary authorities on public health administration. He says that "public health demonstrations are giving added assurance that the health of any community can be greatly improved by public measures financially within the reach of all governing bodies."

"American medical men who recently dedicated their efforts to increasing the average life span twenty years within the next half-century, are on the right track.

"Years are already being added to the life of each member of the community, and every advance in curative and in preventive medicine implies an enhancement in the general standard of life. During the past seventy-five years not less than fifteen years have been added to the average duration of life in several countries. During the past twenty years the gain in length of life has been greater than in the previous fifty years. Already in the registration area of the United States—notwithstanding the vast number of avoidable deaths in childhood and in adult life, caused by diseases well

within our control—the average expectation of life for every infant at birth is fifty-eight to fifty-nine years. A large part of this improvement is directly due to the increased care of health now becoming more general, both by personal effort and by the work of health authorities and of voluntary agencies."

As an example of such work, Dr. Newsholme cited the New York health demonstrations, in which the Milbank Memorial Fund is spending \$2,000,000 to reduce sickness and death and to demonstrate that present-day medical knowledge has made longer life attainable.

"After the demonstrations are completed, it will almost certainly be found that there has been an accelerated degree of improvement in the general rate of infant mortality per 1,000 births. This ought to be true even more for the rate of mortality among infants in the first month after birth and for the deaths of mothers connected with child bearing. So also with mortality from diarrhea, and especially from diphtheria.

"In promoting the welfare and health of the mother and her child in the early years, one can most easily anticipate disease, and bring the work of hygiene out of the region of pathology and disease into that of positive attainment and enhancement of health. Satisfactory care of the mother during pregnancy and of the infant, by means within the reach of all (including a regulated diet, fresh air and sunshine,

avoidance of exposure to the infectious colds of adults, and other medical preventive measures), will prevent rickets and many serious ills of childhood.

"Maternal and child health are especially indicated in the prevention of two great scourges of humanity, tuberculosis and venereal diseases. No work for the mother and her child can have more than a fractional result, which does not constantly aim at minimizing and eventually eliminating these two arch-enemies of mankind.

"Evil environmental circumstances

which cause excessive mortality also cause illness and permanent deterioration of health in a vastly greater number of persons. In the battle of life, there are always more maimed and wounded than there are killed. There are those who contend that in a prolonged life we do not really live longer, but are merely longer in dying. To them we throw back the burden of proof of their assertion and maintain that each advance in the civilized pursuit of health means not only a temporary salvation from death, but an enhancement of the general standard of life."

OUR GOAL—THE NORMAL CHILD

By HERBERT HOOVER

The President's Address, Annual Meeting, American Child Health Association (American Health Congress) Atlantic City, Tuesday evening, May 18th, 1926.)

The American Child Health Association is dedicated to the service of children. Its field is the determination and promotion of safeguards for the health of children of the nation. Great as its sympathies are, its work is not primarily concerned with the unfortunate sick and deformed. So far as it reaches the individual child its job has been that of prevention.

Our organization and our technical staff are endlessly discussing and constantly endeavoring to build up such surroundings as will secure the normal child. I hear a great deal of this normality. I would like to know what the normal is in children. Parents would like to know what it is. The nation needs to know what it is. So that my purpose here today is to put it to this great gathering of men and women of technical learning and skill on these problems, that you find for us the standards by which we can know what a normal child is.

It seems somewhat of an anomaly, an arraignment of all our scientific endeavor, our beneficent intentions, that this standard of normal child is as yet an illusion, a fantasy into which it is necessary that we blow

the breath of life, you with your scientific knowledge, your broad experience—I, as the layman, demanding that the normal child become a possibility.

If we only knew, it would give a new orientation to all these endeavors. It would transform our thinking from deficiencies to positive terms of an ideal—I do not say the perfect child, because I do not wish to ask the impractical—but there must be some basis upon which parents, teachers and health authorities can check up the individual child—and see that it keeps normal

As an incentive to parents, as a stimulus to communities, we need more pains in portraying the healthy child and the steps that contribute to this end, so that all can understand. We want a degree of health that is practically attainable. To be sure we should like perfect children. But this may be asking too much. Tell us if you will, what is the normal child, or better yet, the natural child?

I hope that normal implies the usual, but in all the sense it is here used it also implies something more than average. It is so far a nebular

ideal. It no doubt changes with the years. The normal child of the year 1800 will not serve us today. Our standard of normality is on a higher plane. Define for us progressive normality, 21st century normality, that we may strive for this in the 20th century. Picture to us in words, in crayon, and in scientific fact the child that nature, working at its best, intended. Describe to us, in terms that fathers and mothers can understand, the child whose organs are functioning efficiently, whose growth is proceeding unimpeded, whose senses are developed unhampered, and whose potentialities are being realized, mentally, morally and physically.

I cannot impress upon you too strongly the necessity of clarifying this goal of fruitful childhood, upon which our hopes are so intensely centered. If our picture is only halfway health we shall not know how to strive for something better. Unless you make visual to us what is attainable, we cannot recognize our shortcomings.

It is time that we envisage this "normal" child, and it is time that we made that normal child a familiar figure in the homes of the country; that we make it clear to Mrs. Jones and Mrs. Smith how they can make their Mary and their John approximate that normal child. It is all well enough to state and restate the safeguards which the community should have, to talk of the evident deficiencies. But there are millions of parents who are doing everything they know, and they are asking the question daily: Have I succeeded? Is my child normal?

We surely have enough knowledge if brought together, compared and sorted, to give us some standard of the normal child, or at least lead the way to him. The crux of the problem is, as quickly as possible to bring what knowledge we have into the open and to make it familiar to the average, busy, but deeply concerned parent.

During the seven years of war and after the war I directed, on behalf

of American charity, the care of nearly 15,000,000 different undernourished and waif European children. To some minor extent we were dealing with sick children, but in the main our problem was subnormal children, the toll of orphanage, famine and destitution. Our struggle was to rebuild these children up to an ideal of "normal." And we as laymen insistently demanded from our technical advisers: "What is normal?" I still want to know.

In war-time our advisers insisted that it was a complex and indeterminate question; and for war purposes and the practical problem in front of us, with no time for scientific determinations, our job was to battle up from the obvious subnormal. The multitude of cases we dealt with in those times could be determined even by laymen. A stunted, rickety youngster, who had been one-third fed and that on roughage, barefoot and shivering in rags, is not hard to diagnose as cold, starved and subnormal. And the remedy seemed to be food and clothes and coal. Our technical staffs then had to devote themselves to advising what was the kind and the minimum food and clothing that would give them a chance for life. They did discover many things as to the mass result of short nourishment and warmth. They discovered the special diseases to which children were subjected by shortages of fats or milk and they learned a hundred things of value.

They found also, a profoundly encouraging fact that if the children were young enough they would recover strength and grow back to about their right size and health in an astonishingly few months of proper feeding and warmth. That, in fact, the young human is a hardy animal and has a predilection toward normal if he is given a chance. These masses of pitiable, silent, indolent, woe-begone youngsters would blossom out into playing, chattering, joyous, mischievous human dynamos with a few weeks of proper food and clothes.

During this time all of us on that job had often in the back of our minds the 20,000,000 "best beloved" in America. We envisaged them as always being normal. We foolishly believed it was only poverty, war and invasion that could bring vast masses of children to subnormal. We idealized America as flocks of strong, tousel-headed, dirty-fingered kids, occasionally breaking their bones in rollicking games or catching some current contagion, but otherwise under no duress. For all of which we thanked God that the 3,000 miles of the Atlantic Ocean had forever guaranteed them from invasion and famine.

One day in 1920, however, this illusion had a shock. In a publication of our draft figures it was coldly remarked that 80 per cent of the men of draft age were physically below normal; that one-third of them could not even pass the requirements of a country desperate to raise men for war. We were further told that 80 per cent of all the babies born in America were born perfect. We inquired, how come all this in our country of fine climate and abundant food, of little poverty and great devotion to children? The technical people said, improper nourishment, impure food, neglect, lack of fresh air, of play, ignorance, contagious diseases, lack of medical attention to the little mishaps of life.

And thus it appeared that America also has a job of pulling up the subnormals on a nation-wide scale. It seemed to many of us that the momentous impulse of America toward world children could be well directed toward her own. Some of us offered our help to those devoted folk who with inadequate means and inadequate organization were struggling to bring these issues to public attention. And from these discussions arose the American Child Health Association through the consolidation of several societies. We have found support to the work of the Association to the extent of four or five hundred thousand dollars a year, and

the Association has been steadily boring further into this problem for these four years. We have recently had a public demonstration of the work of the Association in its success of turning May Day through the whole nation into a day when the national conscience was searched as to this health of children. As a result of this searching we have had innumerable enquiries from parents as to how we test out to determine what is the normal child about whom you all talk.

The Association has engaged in a large field of cooperation with health authorities, educational institutions, and in a score of ways steadily building to a better understanding of the problem. It has completed a survey of 86 cities to determine what safeguards are actually being given to the health of children. The result has in it much that is saddening but much that is encouraging. To find that some towns are alive to the problem and are vigorously moving along the road, is encouraging. To find that many are doing but little is saddening.

These are some of the results. No one disputes that milk is essential for children, yet of 35,000 fifth grade children examined, nearly a quarter have no milk. A pint of milk a day is set by our specialists as the minimum, yet 42 per cent of these children had less than this. Only 8 of the cities surveyed pasteurized their milk. There were 18 preventable epidemics among children in these cities in a period of four years. A leading medical authority tells us that of the ten million children of pre-school age in this country malnutrition exists in from 20 to 25 percent. Postural defects occur in from 40 to 50 per cent. Dental defects are most common, from 60 to 70 per cent have caries to a greater or lesser extent.

This means that these children enter the doors of our schools handicapped, liabilities instead of assets. All this is but citing delinquencies. It is vital material with which to

rattle the bones of unthinking and inadequately supported public officials and to awaken public action.

We need also the positive side—what the factors are which contribute to the development of the healthy body, the healthy mind, the healthy social organism, and we should have these factors stated in positive rather than in negative terms of safeguards. Unless we know the factors, we cannot intelligently strive to produce them. We await from the scientific world that formula which will enable all those who care for children, who seek a better era, to mould the boys and girls of today into stalwarts to whom we entrust our hopes of the future.

Standards are wanted, but not standardized children. The ideal child is the optimal child when all factors are balanced. These factors may be very different for different children. We want them different, because the greater the variety of good combinations, the richer will be the range of types, and the greater will be the contributions made to our national life.

Just as the modern science of floriculture aims to produce the widest possible variety of beautiful types, so the science of health development of children should aim to free them from the hampering impediments to anything that would enable each child to blossom in the infinite variety which is characteristic of life.

Our ideal is not only a child free from disease, it is also a child made free to develop to the utmost his capacity for physical, social and mental health. This means liberty to grow, the modern idea of education. Since conditioned environment is essentially the basic feature of our best modern education programs, the conditioning of the child's environment from babyhood to adolescence, with respect to food, clothing, housing, fresh air, baths, exercise and rest, must be considered his elementary rights. But the development of standards with respect to these things

in relation to the child's health should be by the best scientific and educational authorities.

Equally important, and interrelated with the physical needs, are the emotional needs of childhood, such as the need for wise love and understanding, for protection against such psychic blights as fear, and the abuse of primitive emotions such as anger. Only thus may we have a race of children free in spirit and strong enough to carry on the highest ideals of our civilization. Such education for constructive freedom necessitates homes and schools flooded with fresh air and sunlight, with ample play space, with serene and well qualified parents and teachers.

I sometimes hear the term "welfare work" applied to the work of such organizations as yours. If this term means what you and I know your work to be, then I allow the term.

There is bound to be certain amount of economic, unscientific dabbling in human woe which excites in some people the contemptuous use of the term "welfare work." But while I know the futility of much of this kind of effort, yet even unscientific human kindness is still kindness, and through it the spiritual instinct of charity is worth preserving.

Our work is racial defense. If we want this civilization to march forward toward higher economic standards, to moral and spiritual ideals, it will march only on the feet of healthy children. The breeding ground of the gangster is the overcrowded tenement and subnormal childhood. The antidotes are light and air, food and organized play. The community nurse and the community safeguard to health will succeed far better than a thousand policemen.

If you wish to get well of tuberculosis what you have in your head is more important than what you have in your lungs.

DANGERS OF THE COMMON DRINKING CUP

HUGH S. CUMMING, Surgeon General

United States Public Health Service.

Now that the warm months are upon us, when bodily and solar heat produce within us an exceptional craving for water and other drinks, it is well to recall the fact that there may be danger in satisfying this healthy thirst, unless care is exercised in doing so.

It is probably no exaggeration to say that every day there are in the United States, on an average, a million persons who suffer, or are recovering from some communicable disease of some kind. Among the most prevalent and the most damaging of these ailments are the so-called "respiratory diseases" and also we should place here the ordinary contagious diseases, practically all of which are conveyed by the secretions of the nose and mouth, and consequently by the common drinking cup. Included in these groups (respiratory and contagious diseases) are tuberculosis, pneumonia, influenza, diphtheria, scarlet fever, measles, whooping cough, cerebro-spinal meningitis, poliomyelitis (better known as infantile paralysis), smallpox, chickenpox, mumps, German measles, septic sore throat, and last but not least, the common cold. Some of these diseases may be conveyed in some other way, but certainly all of them may be conveyed by the secretions which escape from the body through the nose or mouth. They may be spread through articles that are carried to the mouth, such as glasses, cups, spoons, towels, handkerchiefs, and pencils, if such articles are used in common with other persons.

If one drinks from a glass that reaches him unsterilized from the previous use by a person whose mouth or lips contain the germs of any of these diseases he exposes himself to the danger of contracting them. This danger has long been recognized by the sanitarians of the

country, and it was mainly through their insistence that the first effort was made to combat the continual danger from this source of infection. Kansas was the earliest of the States to enact a law against the common cup and the common towel and similar measures have since been placed on the statute books of forty-five other States.

In order to minimize the dangers of these diseases, and to prevent their being carried from one State to another, the Secretary of the Treasury, on recommendation of the Public Health Service in the year 1921, forbade the use of common drinking cups on trains, steamers, and other public carriers engaged in interstate commerce. The majority of the States themselves have also enacted sanitary measures forbidding the use of the common drinking cup. In addition, many cities and towns have supplemented State laws and regulations with local ordinances which forbid the use of unsterilized drinking vessels at soda fountains, in hotels, restaurants, theatres, and other public places.

Insofar as legislative action can protect—with the exception of two States—the public is protected against the common drinking cup. However, and this is the most difficult factor public health authorities have had to face, the people of the community for whom these safeguards have been devised, oftentimes fail to support the laws by failing to comply with them individually and by failing to insist on their enforcement.

Men and women thoughtlessly expose themselves to infection by these diseases, and what is worse, they permit their children to suffer a like risk, by drinking at soda fountains where they can even see that the glasses are not sterilized between

users. In such a carelessly operated soda fountain there may be—in fact, there actually exists—a veritable “germ exchange.” One wayside cart serving children from infected glasses is a very potential danger to any community. Children ladling out lemonade in glasses that are contaminated with the diseases of others are in like manner a menace to those who are served. One ailing employee may cripple a large office force if a common drinking glass is in use.

A person suffering from any one of the diseases named, carries in his saliva the infecting agent of that disease, and unless the vessel from which he drinks is sterilized or destroyed, the next user takes a chance of becoming infected.

It is because of this menace to the public that the laws in general provide that there shall be sterilization of glasses after each use, or that cups shall be provided which may be used once and then destroyed. The process to be used in sterilizing is detailed in some of the laws bearing on this subject. Ohio, for example, prescribes the following method—namely, that after each individual service, the glass must first be washed by rinsing in cold water, then thoroughly washed in hot water with soap or suitable cleansing powder, or exposed to live steam, boiling water or hot air, the latter at a temperature of not less than 250 degrees Fahrenheit, for a period of not less than five minutes, then rinsed in clear cold water and drained. Heat, of course, is about the best sterilizer known. Boiling water kills most germs in five minutes, and dead germs are harmless unless they exist in enormous numbers.

There is an obvious disposition on the part of many dispensers of soft drinks to avoid this sterilization process, and it is not uncommon for such glasses to be dipped and redipped until the water in which they are rinsed becomes a veritable cesspool of germs; and each time a glass is rinsed its potentiality for danger increases for the next user.

The difficulty of enforcing adequate sterilization has led some communities, for example, Durham and Goldsboro, North Carolina, to forbid the use of glasses in soft drink places altogether. At many State and county fairs they are also prohibited.

It is not alone in soft drink dispensaries that the dangers of the unclean glass may be encountered. These dangers may exist in restaurants, cafeterias, theatres, and many other places.

The individual manifests the same carelessness every time he uses a common drinking glass at a picnic, on a motoring trip, or in a camping ground or park. In the case of the motorist, the peril is aggravated by the fact that he may carry disease from one State to another.

Every man, woman and child has a responsibility in this matter, a responsibility to himself and to his fellows. It is the duty of any one who drinks at a soda fountain, a restaurant, or any other place, to find out whether the receptacle from which he drinks is safe, and if not, to demand one that is. Insanitary conditions of whatever nature should be immediately reported to the local health authorities.

When traveling by motor, one should be sure that each member of his party is provided with his own individual drinking cup and everybody concerned should take the utmost pains to avoid becoming infected, and to avoid carrying infection from one place to another. Most of all the greatest vigilance should be observed for the protection of one's own and his neighbor's children. The young do not know enough to discriminate and should be safeguarded against the ever present dangers of the common drinking cup or glass when such common receptacles are allowed to exist.

The person who spits on the floor and sidewalk may have a cold in his head but it's certain he has little else. .

HOME CARE AND NURSING OF TUBERCULOUS SICK

Dispose of Sputum Safely, Keep Children Away—Rest, Food and Fresh Air as in Sanatorium

The safe disposal of the sputum of tuberculous patient in order to protect herself and the other members of the family from infection is the first thing the home nurse must attend to in the nursing and care of the active case of tuberculosis in the home. The methods and precautions for the prevention of infection from tuberculosis are like the cure of the disease itself, so very simple that one is liable to become careless in the careful, systematic disposal of the sputum.

Necessary Precautions

The patient must cover his mouth with a piece of gauze or a paper napkin every time he coughs. He must deposit what is coughed up in a paper napkin, or regular card board sputum box with a tin container. If the paper napkins are used to receive the sputum from the patient's mouth they must be kept in a bag, safely away from flies until they can be burned. The cardboard sputum box is filled with sawdust and burned. Do this everyday if anything is expectorated. If any sputum by accident gets on the floor, the bed clothes or the furniture, pour over it at once a mixture of two tablespoonfuls of carbolic in a pint of hot water, let it soak two hours and then clean the place carefully.

The patient's cup, glass, plate, knife, fork and spoon must be scalded in hot or boiling water and washing soda and wiped dry after use. His napkin, towels, handkerchiefs, pillow cases and sheets must be well boiled before going to the wash.

Don't raise dust when sweeping the patient's room. This scatters the germs about. Put sawdust, wet tea

leaves, or wet bits of paper on the floor before sweeping. If possible keep all flies out of the room and by all means keep them away from the sputum container, gauze or napkin the patient uses to cover his mouth with when he coughs and his hands and mouth.

Keep Children Away

If there are children in the family keep them away from the person suffering with active tuberculosis as much as you can. Children are much more susceptible to infection from tuberculosis germs than grown-ups are. Many grown-ups break down from active tuberculosis that was contracted in childhood from some member of the family suffering with the disease. Don't let children lie on the patient's bed, hug or kiss the patient, or handle any object that the patient has handled until it has been sterilized.

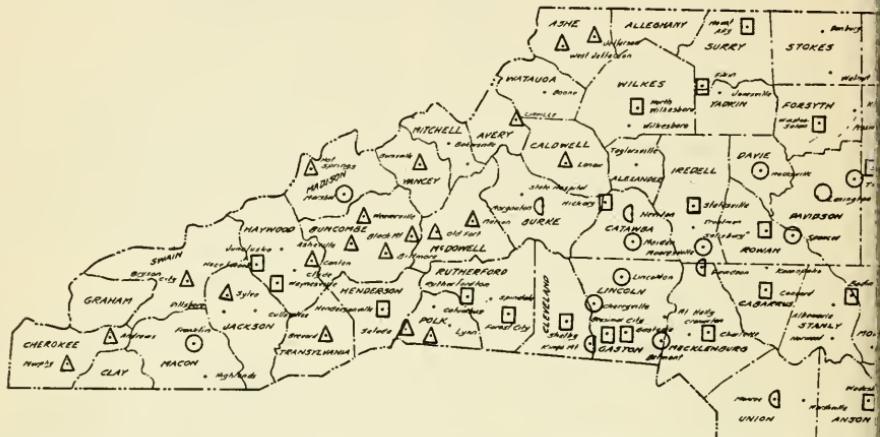
Rest, Food and Fresh Air

Rest is the cure for tuberculosis. The patient "curing" at home should have his day so arranged that his periods of rest correspond with those in a well-run sanatorium. If the doctor has ordered complete rest in bed it should be complete and the home nurse who is responsible for the care of her tuberculous patient must see that this rest is received. She must see that company is kept away when it is not best for the patient to have it and during the patient's rest hours when he is supposed to have no disturbance see that he has none.

The best home nursing of the tuberculous is that nursing and care that follows most closely the regular routine of a well-ordered sanatorium.

July, 1926

THE PUBLIC WATER SUPPLY



GROUND WATER SUPPLIES

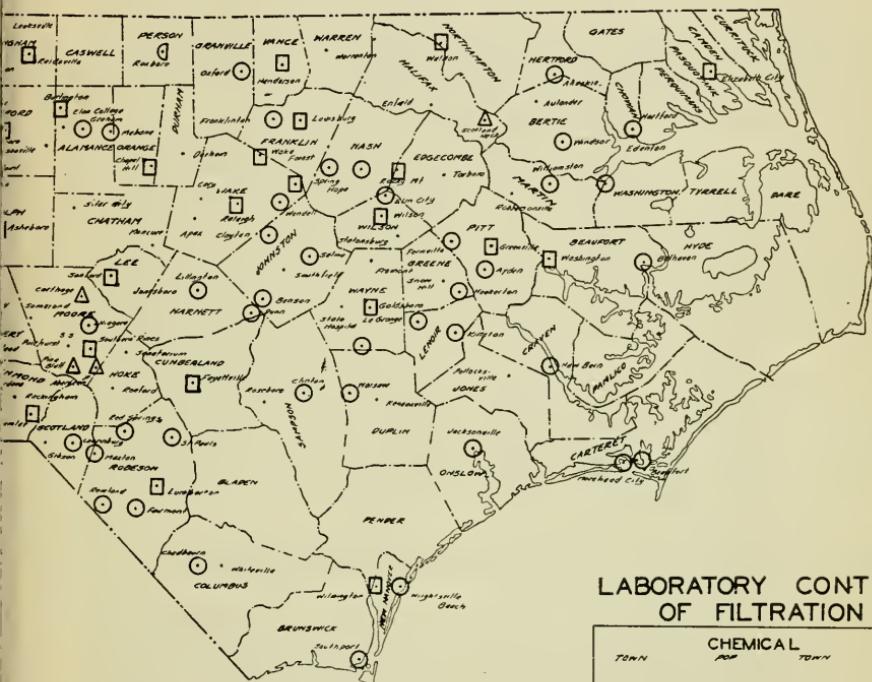
SURFACE WATER SUPPLIES

TOWN Andress	POP 10,544	UNFILTERED		STERILIZED		LIQUID		CHLORINE		TOWN Arlington	POP 2,600
		TOWN	POP	TOWN	POP	TOWN	POP	TOWN	POP		
FILTERED											
Burlington	3,932	Durham	21,713	Goldsboro	12,296	Hendersonville	3,720	Raleigh	2,600	Applington	2,600
Canton	2,884	Elizabeth City	8,253	Greenville	18,661	Nickey	3,670	Statesville	2,600	Statesville	2,600
Chapel Hill	1,933	Ellen	1,133	Groverelle	3,772	Hab. Point	14,502	Smithfield	10,955	Smithfield	10,955
Charlotte	46,938	Fayetteville	8,877	Hamlet	3,608	Pinehurst	33	Wadesboro	2,450	Wadesboro	2,450
Concord	3,303	Gastonia	16,571	Henderson	3,022	Prosperity	10,000	Washington	6,314	Washington	6,314
FILTERED											
Albemarle	2,051	Bedford	3,040	Louisburg	1,054	Reidsville	2,418	Sherby	3,608	Sherby	3,608
Asheboro	2,539	Bogart	2,176	Mc Afee	4,782	Selbyville	18,884				
FILTERED NOT STERILIZED											
Forest City	2,512	North Wilkesboro	2,364	Spindale	2,940	South Forest	1,423				
Hickorywood	4,064	South Wilkesboro	1,628	Swain	743	Westmoreland	1,042				
Lumberton	6,991	Towerville	3,333	Tabor City	4,568	Wadesboro	2,383				
UNFILTERED NOT STERILIZED											
Ashville	28,504	Bryson City	6,672	Morristown	1,264	Old Fort	331	Wadesboro	602	Wadesboro	602
Baldwin	172	Burnsville	215	Mark Hill	364	Salisbury	543				
Black Mt.	331	Hot Springs	435	Murphy	1,114	Sylva	863				
Brevard	1,658	Lenoir	3,718	Nantahala	26	Town	10,67				

BUREAU OF SANITARY EN
NORTH CAROLINA ST

SERIES OF NORTH CAROLINA

JULY 1921



LEGEND

- | | |
|-------------------------------------|---|
| ○ Shallow Ground Supply | △ Surface Supply - Unfiltered |
| ○ Deep Sealed Ground Water | ○ Chlorinated, Liquid Chlorine |
| □ Surface Supply Gravity Filter | △ Sterilized, Hypochlorite |
| □ Surface Supply Pressure Filter | □ Chemical Control of Filtration |
| 3 □ Surface Supply Dual Sand Filter | □ Bacteriological Control of Filtration |

LABORATORY CONTROL
OF FILTRATION

CHEMICAL

TOWN POP TOWN POP

CHEMICAL AND BACTERIOLOGICAL

Wilmington 33,572

RECAPITULATION

TYPE OF SUPPLY	NUMBER SUPPLIES	PERCENT TOTAL NUMBER SUPPLIES	POPULATION SERVED	PERCENTAGE TOTAL STATE POPULATION SERVED	PERCENTAGE CONSUMPTION PUBLIC WATER SUPPLY SERVED
Shallow Ground Water	17	16.7	26,111	1.0	4.6
Deep Sealed Ground Water	47	35.7	108,250	4.5	18.5
Unfiltered Surface Water	18	18.7	43,513	1.8	7.7
Filtered Surface Water	50	37.5	417,900	16.1	6.9
Totals	132	100.0	592,562	23.2	100.0
Unfiltered, not chlorinated	17	16.7	49,679	1.7	7.4
Shallow Ground, Chlorinated	9	3.1	7,000	0.3	1.3
Deep Sealed Ground, Chlorinated	4	3.1	66,794	1.6	5.6
Unfiltered Surface, Chlorinated	1	0.7	1634	0.06	0.3
Filtered Surface, Chlorinated	27	21.3	323,541	12.7	35.0
Filtered Surface, Hypochlorite	9	6.8	57,023	2.3	10.0
Filtered Surface, not sterilized	12	9.1	27,000	1.1	4.6
Chemical Control, Filtration	none	none	none	none	none
Chemical and Bacteriological Control	1	0.7	33,372	1.3	5.7

ENGINEERING AND INSPECTION
BOARD OF HEALTH

In order to follow this program the home nurse must have her family physician or some special physician, preferably one trained in tuberculosis work, to keep a close watch of the patient's physical condition and to advise her as they go along how to care for the patient.

It is not absolutely necessary to have a sleeping porch, but the patient's room must be well ventilated, cross ventilation preferred in both summer and winter.

A balanced menu with fruits, vegetables and plenty of milk and eggs, not raw eggs, unless ordered by the doctor, well cooked and attractively served is all that is necessary for food of the "T.b." unless for some reason the doctor orders a special diet.

Cheerful Outlook

In tuberculosis the sufferer's mental outlook has a great deal to do with whether or not the person climbs the grade that leads back to

health. The home nurse can help her patient in many ways to keep his mind healthy and happy. As much as lies within your power keep unpleasant news from your patient and never discuss "graveyard" subjects or let others discuss such subjects with your patient. If your patient is allowed to read or to do some little things in bed see that he is well supplied with fresh, attractive reading matter and the necessary materials to keep himself occupied.

The home nurse must remember that tuberculosis is a disease that takes months and sometimes years to "cure." You must keep cheerful, happy and hopeful and keep your patient so, no matter how hard the battle is going for you and your charge, who usually will be someone very dear to you. With patience and perseverance, other things being equal, you will oftentimes be wonderfully rewarded with the returning better health of your charge.—(Sanatorium Sun.)

THE PHYSICIAN AND PUBLIC HEALTH EDUCATION

"The new developments in medical science have created the necessity for changes in modes, methods and economics so far reaching as to affect all phases of national, family and individual life. The physician both of the present and of the future must be an integral part of our civilization and much concerned with its changes." And in these changes, "professional policies, narrowly conceived, can never successfully oppose the rightful interest of the public.

"Physicians until recently have contributed insufficiently to public health education. Today every licensed physician is being urged to prepare himself to teach his own patients the principles of health. Sufficient progress has already been made to warrant the statement that the field of public health education must and should be invaded by the physician. Organized medicine has approved this measure.

"The family physician must educate his patients and community in preventive medicine and be to some extent a health administrator. His chief role and his chief service will be to keep his patients well. Evidently, such service can be made possible only by maintaining intimate, clinical information, well recorded, regarding every man, woman and child who seeks his service. And every man, woman and child in every community should have his health recorded in the files of his family physician. Too many of our inhabitants worry through life with only fairly good health, and while they accomplish their daily duties, these fairly well persons may never know the exuberance and happiness of perfect health. Hence, one goal of the future practitioner of medicine will be the attainment and maintenance of exuberant health, which is the inherent right of every person. A higher average of overflowing good health means a higher average of

"The family physician must edu-

happiness, comfort, usefulness and economic value of the individual. The superman will never materialize without superhealth.

"The new era in medicine which physicians of the future must be pre-

pared to enter must also rest on the foundation of a wide and comprehensive plan of personal and public health education."—Address by Wendell C. Phillips, M.D., President Elect, American Medical Association.

HOOKWORM DISEASE FROM THE LAYMAN'S POINT OF VIEW

From "Viva Mexico," by Charles Macomb Flandrau

Ezequiel, father of Candelario, stops on his way over to the coffee tanks to tell me that Candelario is sick and he would like me to prescribe. As Candelario is one of my godchildren I have to show more interest in him than I feel.

"He's always sick, Ezequiel," I answer; "my medicines don't seem to do him good." Ezequiel agrees with me that they don't. "Except for his stomach, which is swollen, he has been getting thinner and weaker for a long time. Have you any idea of the cause?" Ezequiel, staring fixedly at his toes, confesses that he has.

"What is it?"

"I am ashamed to tell you."

"Don't be ashamed; I shan't speak of it, and if I know the cause I may be able to do some good." Ezequiel, still intent upon his toes, suddenly looks up and blurts out:

"He's a dirt-eater."

"Oh well, that accounts for it. Why don't you make him stop?" I ask, at which Candelario's father shrugs hopelessly.

And well he may, for dirt-eating seems to be a habit or a vice or a disease, impossible to cure. Many of them have it—grown persons as well as children—and in the interest of science, or morbid curiosity, perhaps, I have tried, but with little success, to get some definite information on the subject. Nobody here who drinks to excess objects to admitting he is a drunkard. He will refer to himself rather proudly as "hombre perdido" (a lost man), and expect to be patted on the back. But I have known a dirt-eater to deny he was

one even after a surgeon, to save his life, had operated on him and removed large quantities of dirt. As the habit is considered a shameful one, information at first hand is impossible to acquire. Candelario, for instance, is only seven, but although his father and mother know he is a dirt-eater, they have never caught him in the act. "We have watched him all day sometimes," Ezequiel declared, "every minute; and he would lie awake at night until we were both asleep and then crawl out of the house to get it." Whether there is a particular kind of soil to which the victims are addicted or whether any sufficiently gritty substance will do, I don't know; neither does Ezequiel. Among foreigners here the theory is that their stomachs have become apathetic to the assaults of chile and demand an even more brutal form of irritation. General emaciation and an abdominal toy balloon are the outward and visible signs of the habit which can be broken, they say, only by death. One woman on the place died of it last year, and her seventeen-year-old son, who must have begun at an early age, as his physical development is that of a sickly child of ten, is not long for this world. There was nothing I could do for my unfortunate little godchild, and Ezequiel walked slowly away, looking as depressed as I felt. For Candelario is a handsome, intelligent little boy and deserves a better fate. But—"estera mejor con Dios!" (He'll be better off with God).—(The Bulletin of the International Health Board.)

SECURING IMPROVED TECHNICAL SUPERVISION OF WATER PURIFICATION PROCESSES

By H. E. MILLER

(Before the American Waterworks Association at Buffalo, June 8, 1926.)

It has been requested that this paper be prepared with a view to relating briefly the developments which have taken place in improved water purification plant operation practice in North Carolina within the past few years. The paper will not, therefore, deal with the technical considerations involved, but will cover the developments in improved supervision of water purification processes with respect to how these improvements have been brought about, what has been accomplished in this connection and the end toward which this further development is directed.

The survey conducted by the California State Board of Health in 1924 tabulating the filter plants of one million gallons per day capacity, established North Carolina in third place, with Pennsylvania and Ohio holding first and second place respectively.

Ground water production is especially limited in the central and western sections of the State, and few towns ever find ground water supplies adequate after a population of 4,000 or 5,000 has been reached. Towns thus served usually experience water shortage before the 2,500 population point has been passed. North Carolina is therefore essentially a surface water supply State.

Since 1899 there have been State laws regulating the sanitary protection of watersheds of public water supplies. Since 1905 there has been a statute requiring the monthly submission of samples of water from public water supplies to the State Laboratory of Hygiene. State Board of Health approval of plans has been required since 1911.

From 1911 to 1918, there was an engineer attached to the department

who, together with the engineer member of the Board, reviewed and passed upon plans. During that period, however, field work was not common practice, and for a portion of 1918 and 1919 there was no engineer employed. The statute establishing the Bureau of Sanitary Engineering and Inspection was enacted in 1919. The primary purpose of establishing such a Bureau, however, was to provide machinery for enforcing State-wide sanitation laws enacted at that time. In 1921 the Bureau was put on a general appropriation basis permitting the development of its activities into the usual lines of sanitary engineering practice carried out by State Boards of Health.

1921 Map

The problem encountered differed widely from that of other states with extensive water purification problems where water purification plant control had been developed to a high degree of efficiency, because it involved a large group of small and medium sized filter plants the largest of which would, in most other states where water purification was encountered to any extent, be classified as small plants as will be observed from Figure 1, the water supply map and tabulations of 1921 (Pages 16-17).

A preliminary survey demonstrated the necessity of a wholesale reconstruction and improvement of water purification plants before much improvement in operation could be effected, because the plants were in general seriously defective, and often obsolete in design. Mechanical devices for accurate control and regulation when provided were usually out of repair and in disuse. It was

found that 36 of the 50 filter plants would either have to be replaced by new plants or would have to be reconstructed to an extent almost equivalent to new plant construction. Major repairs and overhauling were necessary in 10 plants and 4 required only certain minor improvements. These figures are based on a comparison of plants then existing to the then accepted and generally recognized standards of water purification practice. There are now a total of 78 filtered water supplies, most of which have already been made to conform in most respects to accepted standards of modern water purification practice, the remainder of which are either under construction, the contract has been let, or the engineers have been employed and funds provided.

Technical supervision with complete laboratory control was practiced in but one plant. This plant had been so operated for 10 years, but the practice had not been adopted by any of the other plants in the State. Alkalinity determinations were made in a few of the other plants. For the most part, however, the application of chemicals was determined by visual observation of the water and strictly rule of thumb procedure.

With all the shortcomings of water purification equipment and operation control which were probably no worse than the conditions of the average state at that time there is but one water-borne epidemic of typhoid fever charged to the history of the State. This is principally due to the influence of earlier water supply legislation regulating the sanitary control of watersheds and requiring regular bacteriological examinations.

Construction Chart

In view of the fact that it was found that a wholesale reconstruction of filter plants would have to take place before any system of operation could in general be relied upon for effective results, attention was first concentrated upon securing

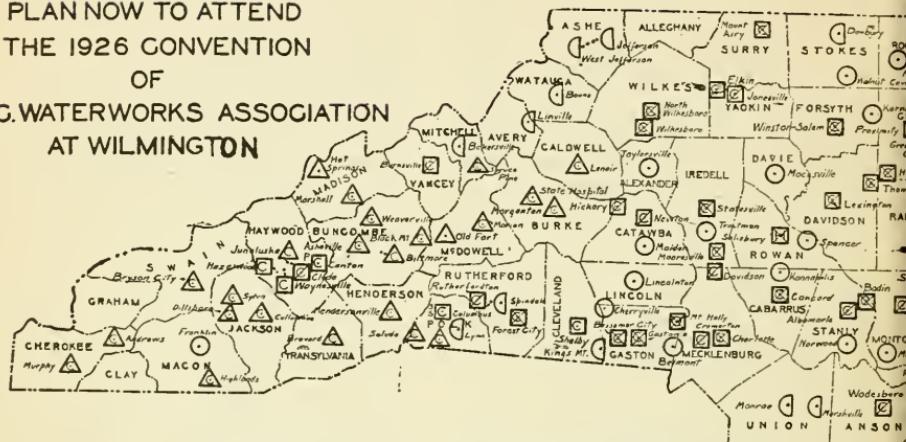
reconstruction and improvement of filter plants. Since this paper is a discussion of the development in operation control, however, the construction developments will be given only passing mention. The reason that many of the plants range around the 90 per cent line, as shown in Figure 2, is that this Chart actually represents the character of the water-supply system and deductions have been made for cross-connections and other features not properly chargeable against the plant. (This chart, as well as the chart and curves which follow, was derived by means of a system of evaluation details not within the scope of this paper, and is in no sense intended as a system of scoring either filter plant equipment or operation but is simply an arbitrary measurement of extent of compliance with generally recognized best practice. The data is taken from office records, primarily intended only for the guidance of our own organization, and is used here, simply because it is found the most convenient method at hand for illustrating relative progress.)

In the light of the prevalent opinion among water purification men there seemed to be little doubt as to the justification of technical supervision and laboratory control of the 6 larger plants. The supplies were therefore grouped as follows:—The cities of over 25,000 population in which trained operators with laboratory control could be expected; cities between 25,000 and 10,000, in which the possibility of technical supervision would probably be determined by the local condition in each case, and those below 10,000 population in which technically supervised operation was not considered economically within reach.

Among the larger plants Charlotte was one of those in which it seemed evident that a big economic saving in addition to the improved public health protection might be achieved by close technical supervision of operation. An experienced operator was secured for this plant and at the close of the first year a net saving

THE PUBLIC WATER SUPP JANUARY

**PLAN NOW TO ATTEND
THE 1926 CONVENTION
OF
THE N.C. WATERWORKS ASSOCIATION
AT WILMINGTON**



GROUND WATER SUPPLIES

		SHALLOW GROUND WATER					
TOWN	POP	TOWN	POP	TOWN	POP	TOWN	POP
Aberdeen	890	Boone	471	Kings Mountain	3091	Nigora	110
Ashurst	1681	Carthage	1012	Linville	350	Pine Bluff	212
Aulander	533	Dobbury	225	Lynn	100	Robersonville	1491
Ayden	2014	Entield	1888	Marchville	748	Rowland	767
Bakersville	332	Jefferson	202	Monroe	4036	Scotland Neck	2228

	DEEP	SEATED	GROUND	WATER	
+Beaufort	3210	Eaton College	537	Kinston	11,159
Bethaven	1816	Fairmont	1135	LoGrange	1519
Belmont	3823	Farmville	2262	Lillington	639
Benson	1284	Franklin	970	Lincolnton	3578
Cory	736	Fremont	1466	Lillington	1010
Chadbourn	1121	Gibson	244	Madison	1354
Cherryville	2243	Gibsonville	1372	Maiden	1567
Clayton	1423	Graham	2366	Maxton	1435
Clinton	2615	Hawickton	335	Mocksville	1188
Cordova	330	Jacksonville	745	+ Morehead City	3417
Edenton	2771	Kannapolis	6000	Mount Gilead	1001
Ellijay	735	Kenanville	318	Mount Olive	2910
+ CHLORINATED		Kernersville	1264	Nashville	1034

SURFACE WATER SUPPLIES

		UNFILTERED			STERILIZED LIQUID CHLORINE		
Andrews	1983	Bryson City	1017	Lenoir	3893	Murphy	1532
Asheville	33375	Cullowhee	550	Marietta	1916	Saluda	706
Billmore	172	Dillsboro	228	Marshall	748	Spruce Pine	717
Black Mountain	641	Hendersonville	4171	Morganton	2945	Sylva	946
Brevard	8027	Lake Junaluska	2350	State Park, Morehead	2000	Troy	1250

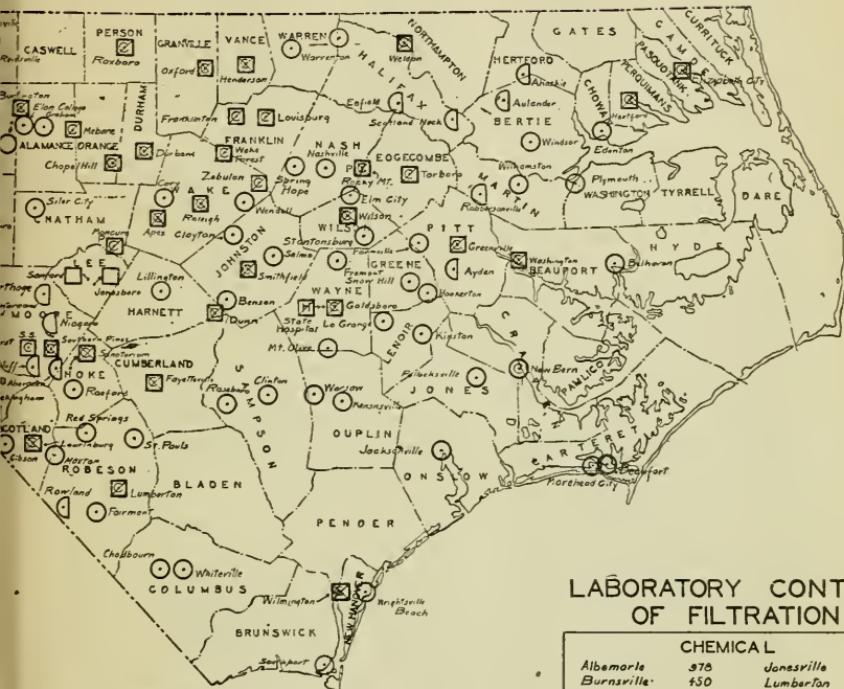
		FILTERED			STERILIZED LIQUID CHLORINE		
Albemarle	2378	Dunn	3236	Hertford	1704	North Wilkesboro	2533
Apex	1018	Durham	4228	Hickory	5737	Oxford	3905
Asheboro	2305	Elizabeth City	3181	High Point	23038	Pinehurst	2100
Boden	3250	Elkin	1350	Jonesboro	929	Raleigh	23771
Bowman City	2939	Fayetteville	3733	Jonesville	875	Reidsville	3565
Burlington	6324	Forde City	2672	Laurinburg	2603	Rockingham	2666
Burnsville	450	Fryepoint	143	Leaksville	1049	Rocky Mount	15087
Concord	3175	Gaston	16427	Lexington	5759	Rosboro	1764
Chapel Hill	4000	Goldsboro	13830	Louisburg	2043	Rutherfordton	2009
Charlotte	3228	+ St. Mary's	500	Lumberton	2981	+ Salisbury	1742
Clyde	373	Greensboro	45528	McDowell	1680	Southport	1740
Columbus	191	Providence, N.C.	6607	Mebane	1680	Somerset	350
Concord	10497	Greenville	6607	Mooresville	100	Stanford	3324
Conover	811	Homestead	4485	Statesville	4752	Spartarium	375
Cramerton	2850	Hazelwood	312	Mt. Airy	6306	Snead	3850
Darden	1206	Henderson	5581	Mt. Holly	1477	Smithfield	2169

**BUREAU OF SANITARY ENGI
NORTH CAROLINA STATE**

+HYPPOCHLORITE

MAPS OF NORTH CAROLINA

1926



LEGEND

- Shallow Ground Supply △ Surface Supply-Unfiltered
- Deep Seated Ground Supply "C" Sterilized-Liquid Chlorine
- Surface Supply-Gravity Filter "H" Sterilized-Hypochlorite
- Surface Supply-Pressure Filter □ Chemical Control of Filtration
- Surface Supply-Slow Sand Filter □ Bacteriological Control of Filtration

RECAPITULATION

TYPE OF SUPPLY	Number Supplies	Per Cent Population Served		Percentage Population Served		Percentage Public Water Supply Served
		Number Supplies	Population Served	Total Population Served	Population Served	
Shallow Ground	22	11.8	25,543	6,03	31	31
Deep Seated Ground	67	37.0	112,807	4,37	163	163
Filtered Surface	24	127	65,941	2,38	82	82
Treated Surface	78	41.5	373,442	20,72	73.4	73.4
Totals	163	100.0	761,582	28,37	100.0	
Filtred, Not Chlorinated	2	1.0	1,528	0.05	0.2	0.2
Shallow Ground, Chlorinated	6	3.9	11,337	0.44	1.5	1.5
Deep Seated Ground, Chlorinated	4	2.1	21,239	0.85	28	28
Filtered Surface, Chlorinated	22	11.7	64,413	2,40	8.2	8.2
Treated Surface, Chlorinated	78	41.5	373,442	20,72	73.4	73.4
Chemical Control of Filtration	26	13.8	59,768	2,03	7.0	7.0
Bacterial and Bacteriological Control	44	23.4	501,655	18,32	64.2	64.2

LABORATORY CONTROL OF FILTRATION

CHEMICAL			
Albemarle	575	Jonesville	875
Burnsville	550	Lumberton	2941
Candler	611	Mebane	1680
Cromerton	2850	Moncure	100
Clyde	373	Newton	3375
Elizabeth City	9101	Roxboro	1764
Elkin	1350	Rutherfordton	2009
Davidson College	1206	Somerset	350
Franklin	1183	Tabora	4787
Goldsboro	500	Troy	1126
Hertford	1704	Wadesboro	2707
Hickory	5757	Wake Forest	1425
Louisburg	2043	Zebulon	1108
CHEMICAL AND BACTERIOLOGICAL			
Aber	1047	Lexington	5799
Asheboro	2906	Mooreville	4572
Badin	3250	Mount Airy	4306
Bessemer City	259	Mount Holly	1477
Bishop Hill	6524	New Bern	2235
Bladen	4000	Oxford	3905
Charlotte	52,000	Pelham	29771
Concord	10497	Piedmont	5581
Dunn	3296	Rocky Mount	15007
Durham	42,256	Salisbury	17219
Fayetteville	9,793	Spartanburg	375
Forest City	2,672	Smithfield	2169
Gaston	16,427	Southern Pines	644
Goldsboro	13,830	Statesville	9,543
Greensboro	75,529	Thomasville	6575
Pros. Mt. Ga.	6,607	Weldon	1872
Greenville	4,625	Wilmington	35708
Hamlet	550	Wilson	12554
Henderson	5,581	Winston-Salem	65806
High Point	23,038	Washington	6365
Laurinburg	2,803	Wilkesboro	821
Leadsville	1,849	Rockingham	2,656

ERING AND INSPECTION BOARD OF HEALTH

on cost of operation, principally in chemical supplies, to the amount of over \$7,000 was effected. Next the Winston-Salem plant was placed under laboratory control. When the new water purification plant for the Proximity Manufacturing Company's villages at Greensboro, an industrial community of about 10,000 people, was completed, that plant was also placed under experienced technical supervision.

Thus far, all of the men obtained for this work had to be secured from out of the State causing our cities to pay a premium over what should be expected to have to be paid for men of the same qualifications and experience if available locally. The difficulty was that such men were not available locally, which presented the unmistakable problem of training and developing them.

Operation improvement was undertaken along two different lines:

1. The systematic training and development of the practical operators, those not trained in the science of water purification.
2. The systematic development of operators especially trained in the science of water purification.

In the training of practical plant operators, men of widely varying degrees of education, were encountered. They were trained by degrees, first in the principles, operation, care, checking, and maintenance of equipment and mechanical devices. Next the simpler chemical and physical determinations were taken up and for several years this class of men have also been taught the practical use of pH determinations. Those who demonstrated sufficient interest and capacity were also taught bacteriological determinations, beginning with plate counts and the detection of gas formers and then confirmation.

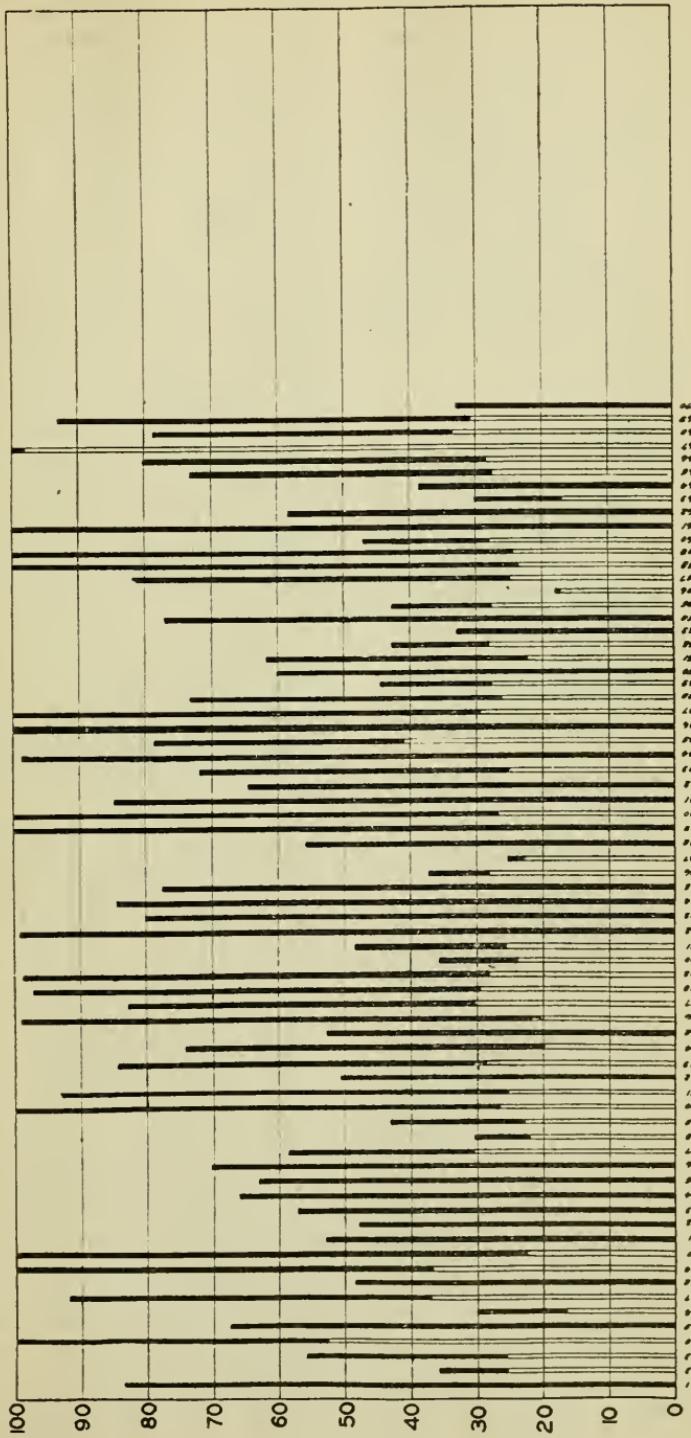
Since the plants were not then equipped with the necessary laboratory facilities it was essential to secure the installation of simple laboratory equipment before any training in work involving laboratory determinations could be successfully

undertaken. These laboratory sets are simple and relatively cheap, but are adequate for the simple determinations required in most plants. The approximate cost of the chemical test set and the bacteriological set is respectively \$30.00 and \$400.00. In all the plants where laboratories are installed, see Figure 3, these sets have been used except in a few of the larger plants which are equipped for more extensive laboratory work.

All this work had to be taught by rule of thumb first, then followed up with the explanation of principles and application in control of the process. In the course of this work there has been developed a bulletin of instructions for filter plant operators. This bulletin known as 211, was written with the sole purpose of explaining technical problems to laymen in non-technical language.

The results accomplished in this training process were so far in excess of what was anticipated and some of the operators have developed such capacity and interest in the further study of the basic scientific principles that there has been a filter operators' correspondence course prepared for their further development. In this course labeled diagrams are used with explanations of the physics, mechanics, and hydraulics of all the common filter equipment and appurtenances; the simpler chemistry of filtration is explained giving digests of some of the text material and specifying reading assignments in general chemistry. The routine bacteriology is covered in the same way as chemistry. In connection with this course questions have been prepared for the operator's use in submitting written reviews.

A remarkable change in the operator's attitude toward his work, and an entirely revised point of view has usually been observed. Operators who were previously not concerned as long as the filter effluent came through, relatively clear, now check the plant equipment and watch their laboratory results religiously for any indication of irregularity of performance.



While this type of operator, in charge of all the supplies having only chemical test sets, see Figure 3, and 22 of the 44 supplies provided with both chemical and bacteriological sets, is incapable of pursuing any appreciable research into water purification and cannot except to a limited extent, apply anything but rule-of-thumb measures to operation procedure. A vast improvement in the operation efficiency in many small plants has been accomplished by thus utilizing the available personnel as far as possible, which partially accounts for the gains shown in Figure 4.

Operation Chart

This plan of training has proven particularly valuable in the case of some of the very small plants, where the personnel is limited and the superintendent often plays a double role, attending to the plant operation himself. In other instances, the superintendent, although not attempting to look after routine operation himself, has taken advantage of the training commonly given plant operators.

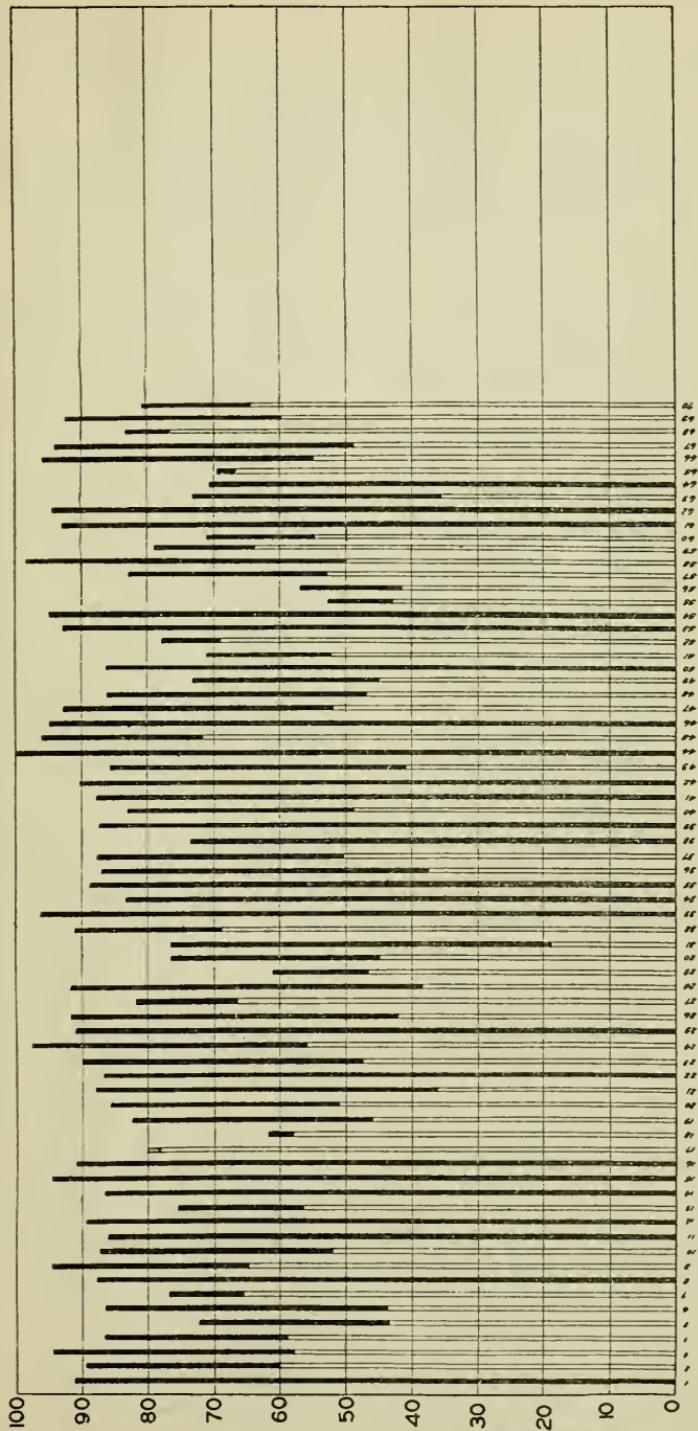
The advantage that the superintendents, themselves, have taken of this training has been of perhaps as much value as the training of operators has been in the advancement of improved operation efficiency. With this better understanding of the problem by the superintendent the needs of the plant in all respects, including the type of personnel best adapted to plant operation are given more consideration and have a far better chance of being adequately provided for in the general administration of the water works department.

The systematic development of technically trained men was begun in the college class room. Although this is a slow process, it is believed to be the best way to develop thoroughly capable men.

The normal lines of development of a young engineer or chemist into a capable operator would seem to be first as assistant in a larger plant

and later to assume charge of a plant himself. Having no large plants, however, that could afford such men as assistants, other measures had to be considered. Much to our surprise, and it is believed out of line with the ordinary conception, it was found that these men could not only be used to advantage, but had a strong appeal to the smaller towns. The prevailing salary for inexperienced graduates seems to be about \$125.00 per month. There are few instances in which the town can, for less than this amount, secure an intelligent practical operator even without experience. It is only good horse sense then to take a man with suitable technical training, even though he has had no experience and give him a chance to develop into greater ability and usefulness. There has never been any illusion in this matter on the part of the town, however, because it is always pointed out that the man has only the technical background and will have to be given an opportunity to learn the practical application by experience. It is just as essential to drill the technically trained man in the practical features and the application of scientific principles as it is to train the practical man in some of the necessary technical principles. The main difference is that the possible scope of the practical operator is limited, with whatever training it is reasonably possible to give him, whereas the man with an adequate technical foundation is simply good material and is of no special value upon graduation but can acquire a fuller comprehension of water purification problems and develop much greater ability. Municipal officials are rapidly coming to appreciate that this is a good bargain, since it is generally felt that the job will not afford a man who already has both the training and experience, but that by trading practical experience for training, both can presently be had in the man employed. This is a fair trade both ways.

While the development of both chemists and civil engineers has

IMPROVEMENT IN EQUIPMENT OF FILTRATION PLANTS
JAN 1921 — MAY 1926

BUREAU OF SANITARY ENGINEERING AND INSPECTION
NORTH CAROLINA STATE BOARD OF HEALTH

been successfully undertaken, the combination making up the sanitary engineering training provides the most suitable background, but to a certain extent, good filter operators like heroes are born, not made.

Our colleges have shown special interest in developing training for the better preparation of men particularly interested in this field of work. The assignment of students to water-works plants in connection with the cooperative course in civil engineering at the University has proven an exceedingly valuable aid.

The mere employment of an inexperienced man of whatever training would of course fall far short of providing adequate technical supervision of operation. It is especially emphasized that it is not intended to convey the impression that these inexperienced men can, unassisted, be intrusted with the responsibility of a filter plant or become proficient if left to work out their problems without proper guidance. All such raw material has to be trained and developed. This is systematically carried out in each case, beginning with the assignment of an engineer experienced in filter plant operation, who actually does all the work at first gradually making the operator assume more and more responsibility until he is fully established. The engineer stays on the job constantly with the operator until he is well established in the plant routine and returns to assist him at frequent intervals, keeping a close check of his work in the meantime by means of detailed daily records of plant operation and tests.

Further experience with the development of this type of operator in the small plant continually reveals new lines of valuable service by which the town may profit as the result of having such an employee. The experience of one town in this connection naturally illustrates to others the value of such service, and thus by working out the combination of certain related activities technically trained men are employed on small plants where the local officials

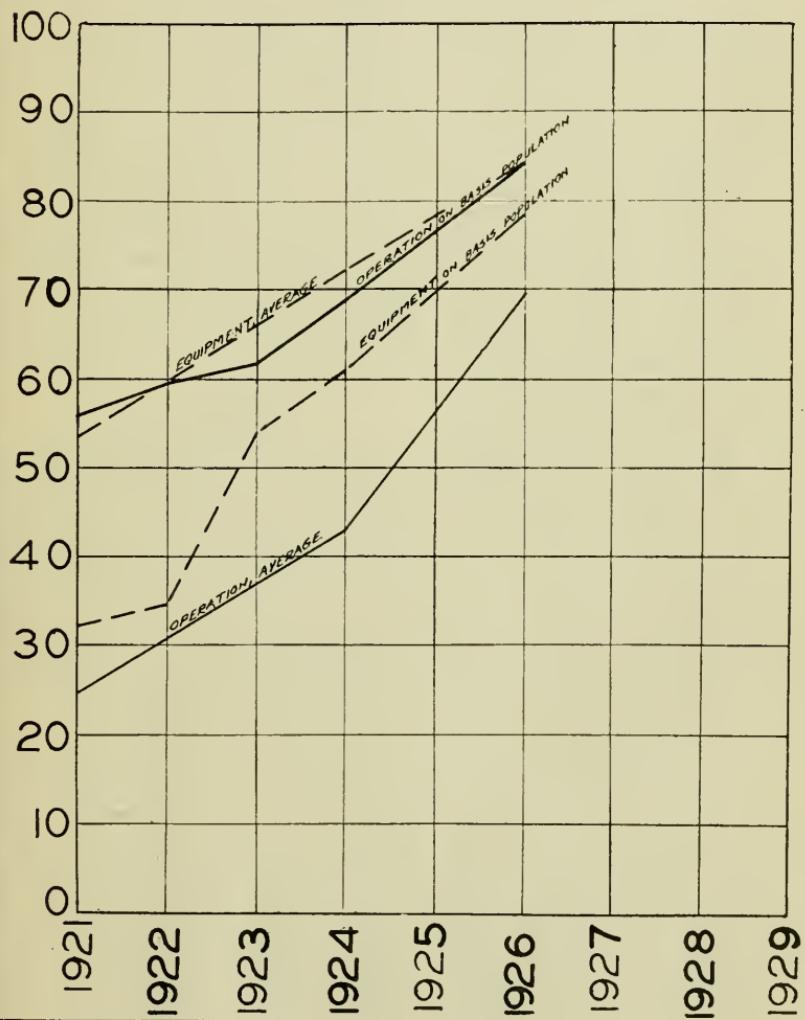
would not otherwise feel justified in providing such supervision. One of the most important illustrations of other fields of usefulness helping to develop technical supervision of small plants is the adaptation of the plant laboratory to milk tests. Towns having a population of from 2,000 to 5,000 do not usually have over 4 or 5 dairies. It has been found quite practical in such cases not only to have the milk testing done at the plant laboratory, but also to have the dairy inspection done by the operator. Where the dairy inspection is done by some part-time employee a figure of \$75.00 per month for towns of this size seems quite well established. If the operator does this work too, the town secures the necessary protection in the control of the safety of both water and milk supplies and enjoys a net saving over the cost of less satisfactory methods of handling both problems.

Where milk testing or dairy inspection work are taken up the operator is also given special training in this work by a specially qualified representative of the State Board of Health in which the same general plan as that used in plant operation training is followed.

Many other fields of valuable service have been developed such as assisting the superintendent in drafting, surveys, mapping, and location of underground structures, and other work for which the training of the engineer is especially applicable. The principal difficulty now encountered is to find sufficient suitable raw material to fill the demand. In this way the development in improved public health protection has taken place in such manner that every dollar expended toward this end has not only been amply justified in the greater protection accomplished but has returned a good economic dividend to the town in actual dollars and cents.

Each man has before him a reasonable field of advancement. Operators' salaries at present range from \$4,000 per year down to \$1,500 per year for beginners.

IMPROVEMENT IN
OPERATION AND
EQUIPMENT FILTRATION PLANTS
ON BASIS POPULATION



This line of experience provides an invaluable background for men on investigation and design in water and sewage purification work, with consulting engineering firms. Furthermore, the rapidly growing problem of sewage treatment with which North Carolina cities are being confronted makes a wider scope of activity and consequent increased value of such service to municipalities possible.

All of these possibilities have been clearly demonstrated in this calendar year. The operator of one of the larger plants accepted a very attractive position with a consulting engineering firm. His successor was secured at a material salary advance from one of the other larger plants. This salary was partially based on the fact that he had experience especially fitting him for handling an important problem of regulation of sewage treatment. His successor was of less experience from a smaller city of the same group, who accepted the vacancy at a material salary increase. This man's successor in turn, was a still less experienced operator from one of the group of small plants who made the change partially for the better professional recognition afforded and for a small salary increase. The average salary increase was \$600 per year. Two other individual advances to new locations have taken place in the same period, leaving openings in each case for the starting of new inexperienced men. One of the changes was made at a salary advance of \$900.00 per year and the other at \$600.00 per year.

Operation and Construction Curves

Operators are started in plants not far in excess of their ability, and have an opportunity to develop systematically and progressively into larger plants and greater responsibility. It is interesting to observe, however, that what was originally intended primarily as a means of development of operators to a point of sufficient ability and experience to handle the larger plants, has turned out to be the main field of

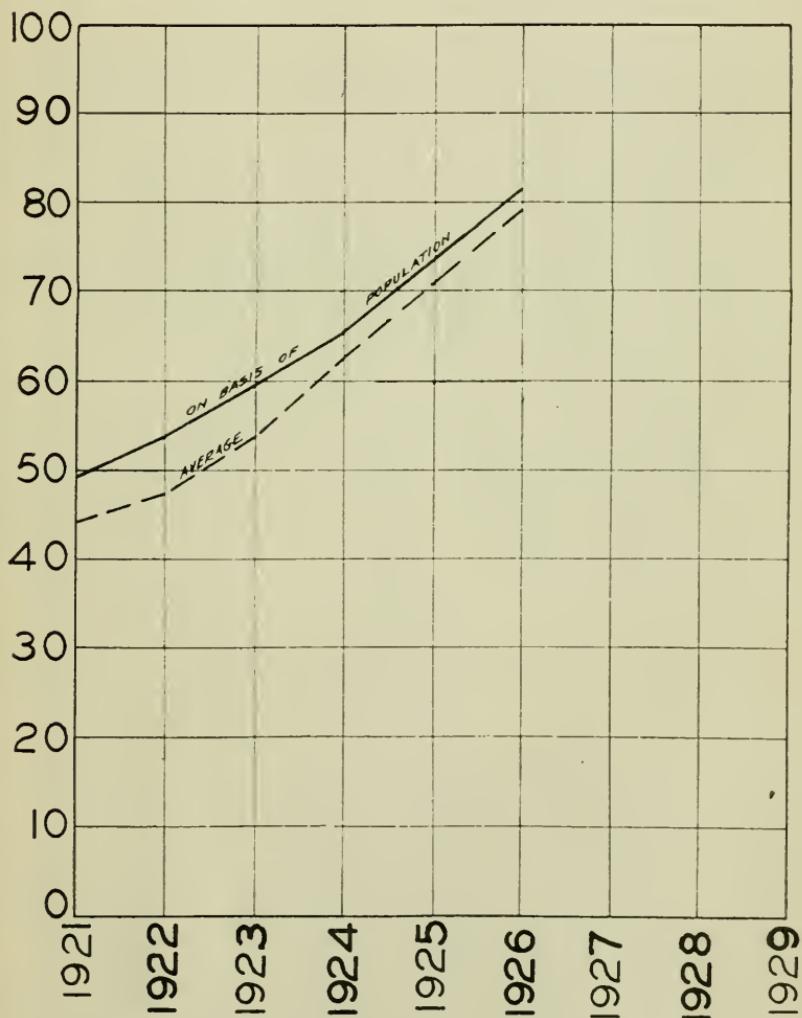
activity. The need, the justification, and the value of such service in small plants have been demonstrated as sufficient to establish the small plant along with the large plant in the technical supervision of operation, with experience requirements and salary remuneration fairly in proportion to the position of the town in the population scale. Thus with the operators in plants of all sizes, equipped with training and experience meeting the needs of each case, men of suitable qualifications may be had locally for any plant from the largest to the smallest. Thus far, the purification processes for 22 of the filtered water supplies are regulated under technical supervision of men especially trained in the science of water purification, aided by complete plant laboratory control. Only four of these men were qualified with filtration experience when employed, all the others have been developed through the plan of training described.

Combined Curves

Although this discussion is primarily concerned with improved technical supervision of water purification processes, failure to recognize the fact that improvement in all lines of water-works practice throughout the State partially represented in Figures 5 and 6 has been quite consistent with the progress in improved operation control, would be an unpardonable omission.

In addition to the factors which have been cited as having exerted an important influence upon the progress in water supply improvements, the North Carolina section of the American Water Works Association is more responsible for the improved water-works practice, generally and specifically, than any other contributing factor that has come to our aid. Few small-town water-works men attend the national conventions. The small town employee would find himself utterly lost in the maze of technical discussions common at the national conventions. The State Section has brought the

IMPROVEMENT IN
COMBINED OPERATION AND EQUIPMENT
FILTRATION PLANTS



water-works men together from all sizes of systems, and has made available a common meeting place, in reach of all. The discussions are sufficiently in the language of the layman to be understood by the average water-works man and include the more common local problems. The water-works man of the small town, heretofore isolated with no scope outside the boundary of his own water-works system, has broken the narrow confines of his range of knowledge of water-works problems, is familiar with the advances taking place in water-works practice and strives to hold his place in the constant march forward. This is not theory or supposition but is a proven fact clearly demonstrated in the advance shown by the average water-works man in his knowledge and understanding of the daily problems and in the general interest which prevails.

The influence of this section has been sufficient to justify the statement that any man, from a state which has no local section can do more for the advancement of water-works practice in his state and the improvement of his own efficiency by helping in the organization and development of a live local section, than by any other means.

SPECIAL PROTECTION FOR THAT 1 YEAR OLD CHILD

Although the 1 year old child seems perfectly safe as he crawls around on the floor plenty of accidents may happen to him. Every mother should check over the possibilities for injury to the baby when he is playing on the floor.

The most common accidents are falling down stairs or out of the window. Next comes swallowing pins, buttons, beads and other small articles that baby may find on the floor.

Children grasp and tug at anything within reach. The 1 year old may pull down on his head anything from the bridge lamp to the goldfish bowl. Or he may get a shock from touching an unprotected electric socket. Wash-

ing machines, gas stoves, knives and forks and the possibility of scalding fat or water being spilled on his head all make the kitchen dangerous for the child unless his mother is careful.

Coal gas from a leaky furnace is not good for the lungs of so small a child, and carbon monoxide escaping from the running motor is another danger that must be guarded against, particularly if the garage is attached to the house.

TEN DON'TS FOR BATHERS

Don't go in where there is no life guard.

Don't get beyond your depth; the best swimmers get cramps.

Don't go bathing less than two hours after eating.

Don't go in alone.

Don't yell "Help" unless you need it. Remember the boy who called "Wolf."

Don't drink liquor and then go bathing.

Don't swim with inner tubes or water wings. They are treacherous.

Don't forget you are endowed with common sense. Use it!

These rules were given by beach directors from Atlantic City, Ocean City, Cape May and Wildwood.

DANGER SIGNS OF PREGNANCY

The prospective mother should call her physician at once if she has:

1. Pain of any kind.
2. Bleeding, even a little, from any place.
3. Vomiting or nausea.
4. Scanty urine or painful urination.
5. Headache.
6. Anything wrong with the sight, especially spots before the eyes.
7. Dizziness or fainting.
8. Difficulty with breathing.
9. Swelling in feet, legs or face.
10. Constipation.
11. Backache.
12. Also when she feels that anything is not as it should be, or when something happens that she does not understand.



The Health Bulletin

Published by THE NORTH CAROLINA STATE BOARD OF HEALTH

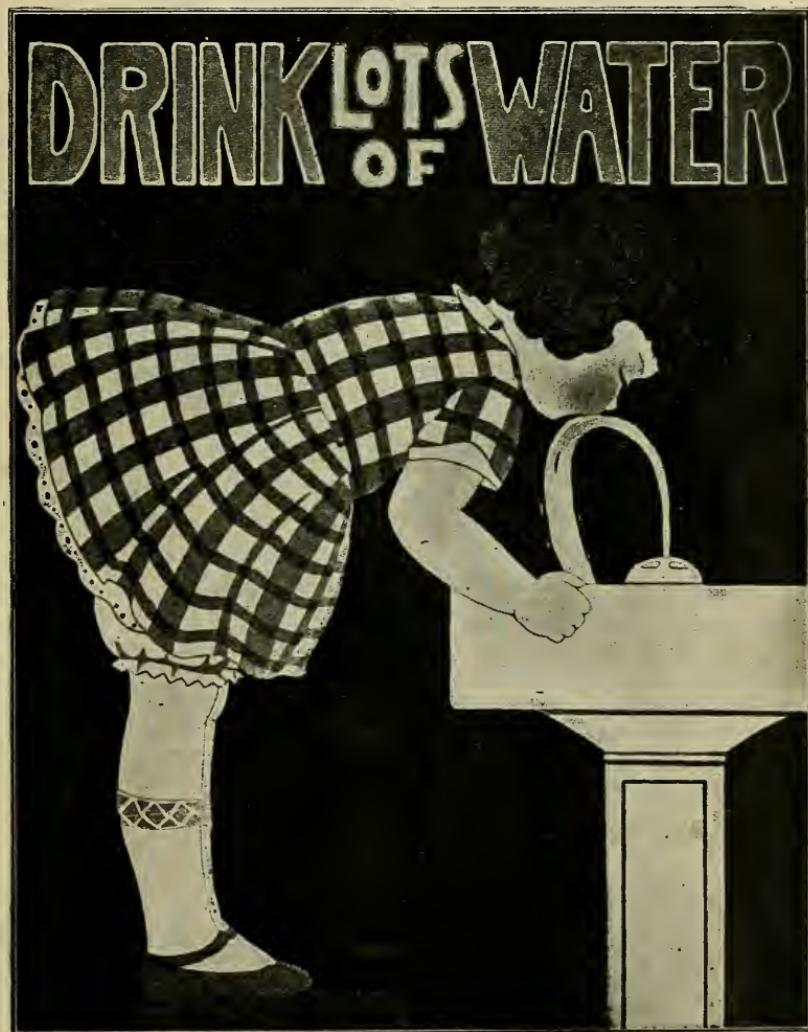
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*This Poster by Ruth Kulish of Glenville High School, Cleveland,
was awarded first prize of \$100 in National Contest conducted
by Hygeia.*

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
Cancer	German Measles	Scarlet Fever
Catarrh	Hookworm Disease	Smallpox
Care of the Baby	Infantile Paralysis	Teeth
Constipation	Indigestion	Tuberculosis
Colds	Influenza	Tuberculosis Placards
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Chickenpox	Measles	Typhoid Placards
Diphtheria	Pellagra	Venereal Diseases
Don't Spit Placards	Public Health Laws	Water Supplies
Eyes	Prenatal Care	Whooping Cough
Flies		

FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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WINNING HEALTH

Neither good health nor poor health is merely a matter of luck. There is no element of chance in the securing of health. Good health can be won by following well known methods of living just as surely as poor health will follow other equally well known methods of living.

Parents are responsible for the method of living of their children up to a certain age and then the child himself must thereafter assume that responsibility.

There are certain things which each individual, regardless of age, must do for himself if he would win good health. Parents should teach the children this fact and cause them to do for themselves during immaturity the things which later mature judgment will tell them are essential.

Secretary Hoover, speaking along this line, has given a valuable message to childhood which is well worth quoting. He says:

"When I was a youngster, it never occurred to our parents or teachers that the kids themselves must take the most important part in their own growing

up in order to be strong and healthy. Moreover, in those times the world knew nothing about why contagious diseases were contagious; nothing about why and what food made for strong brains, legs or lungs.

"Our resolute mothers fought off illness, stuffed our tummies, and hoped for the best from accidents in the swimming hole, from foul balls and climbed trees. Many kids were thought to be condemned to be perpetually weak. To grow up normal and strong was mostly luck plus mother's effort and her prayers.

"But since then medical science has discovered a lot of things. To know how to stop much contagious disease at its origin and to stop it from spreading. We know the rules by which to keep healthy from teeth to toes. We know a lot about safety methods to prevent accidents. . . .

"We know that to have and to hold a good job and to be a good citizen we must have good health. We know all this can be helped by play. It does not abolish joy or adventure."

FAINTING

What is ordinarily understood by the term "fainting" is not a serious condition. Swooning, or falling in unconsciousness, may, however, accompany any one of several serious and sometimes fatal conditions. Different emotions cause different circulatory disturbances. Embarrassment causes blushing by a paralysis of the constricting muscles of the small surface blood vessels. When these constrictor muscles let go, the surface vessels dilate and this permits an excess of red blood to come to the surface. On the other hand, anger and fear cause blanching of the

face by reason of the constriction of the small surface vessels and a decreased flow of blood to the surface.

Shock, such as "surgical shock" following severe injury or during and after a surgical operation is caused by a dilatation of the large internal vessels. With only the proper amount of blood in the body to fill these vessels and maintain circulation under normal pressure it is readily understood that if these large internal vessels suddenly dilate there will not be enough blood to fill them. When they are only partly filled circulation cannot be maintained

and as soon as there is a deficiency of blood to the brain unconsciousness follows.

This is analogous to ordinary fainting. If, as a result of some emotion there is a temporary disturbance of circulation and decreased blood flow to the brain, the result is swooning or fainting. When the person drops down with the head on a level with or below the rest of the body, gravity aids the blood flow to the brain and the person quickly recovers.

Some persons faint very easily when they visit the dentist, the doctor or see someone injured. The emotion caused by seeing blood or seeing some one suffer is sufficient to bring about this temporary circulatory disturbance. First there is blanching of the face with a death-like pallor quickly followed by unconsciousness if the person does not sit or lie down or get out to the open air.

Fainting because of being in a crowded room belongs to this same class as does also so-called "hysterical" fainting. Always emotional persons faint much more readily than others.

Usually persons who faint recover more quickly if left where they fall but they should be straightened out into a comfortable position flat on the

back with the head low. Good circulation of fresh air should be secured, with fans if necessary, and friction of the limbs toward the heart will be helpful. Cold water to the face causes a reaction which often quickly restores tone to the vessel walls. The inhalation of irritants as camphor, ammonia, or "smelling salts" often helps to bring about this reaction.

The pulse of a person in a hysterical faint remains unchanged but in other cases the pulse will be weak and slower than normal. Persons debilitated by malnutrition or sickness faint much more readily than when they are normally well and strong. No attempt should be made to give any sort of medicine to be swallowed until consciousness has fully returned.

Fainting never occurs without cause and when it occurs without apparent cause a doctor should be consulted to find and remove the cause. The person who falls unconscious without apparent cause and who does not give a history of frequent or easy fainting may not be fainting at all but may be in urgent need of immediate medical attention for some serious heart condition. In such cases it is better to call a doctor unnecessarily than to take chances.

DEAD AND DID NOT KNOW IT

Carbon monoxide gas is an insidious poison. It strikes without warning and the person struck may never know about it.

December 25, 1925, in North Carolina there were found two persons in a Ford sedan who were unconscious. One recovered but the other did not. Investigation revealed, as reported to the Bureau of Vital Statistics, that the exhaust pipes of the car had become loosened so that the exhaust gas filled the closed car. Neither person suspected danger but became unconscious as one goes to sleep. One awakened but the other did not.

Many persons have been killed by this insidious carbon monoxide gas in a closed garage while "warming up" a motor on a cold morning. When this exhaust gas is delivered into a closed car the result is the same.

Newspapers recently carried the report of a father and two children being killed in a closed car by this gas in the same manner as the case above reported.

Gas engines, whether in automobiles or in private home lighting plants, are a serious danger when they are permitted to exhaust into a closed room. So, also are gas cooking stoves and gas heaters that are not supplied with an adequate vent flue.

Doctor (with second-hand flivver) : Guess this bus needs some spirits of nitre, seems like it has some sort of trouble with its kidneys!

Other Doctor (with new Packard, which has just beaten the flivver to the club) : Why, what's the matter?

Doctor (with flivver) : It can't pass your'n!

COMMUNICABLE DISEASES

Reports of the State Board of Health for June show a decided large increase in the number of cases of whooping cough and measles during the month as compared with the same month in 1925. There was also an increase in the number of cases of German measles, scarlet fever and chicken-pox. A decrease is shown for typhoid fever and diphtheria.

Parents of young children should use all care in protecting them from whooping cough and measles. These two diseases are especially fatal to babies under two or three years of age, practi-

cally all the deaths from either being of children of tender age.

The following is a comparison of June for the past two years.

Disease	June, 1925	June, 1926
Whooping cough	453	1,277
Measles	36	1,520
German measles	19	412
Diphtheria	82	74
Scarlet fever	43	82
Septic sore throat	0	5
Smallpox	174	127
Chickenpox	196	303
Typhoid fever	159	87
Meningitis	2	2
Infantile paralysis	11	7
Oph. neonatorum	0	0
Trachoma	0	0
Venereal diseases	416	656

MILK SANITATION

By MALCOLM LEWIS

Assistant Engineer, Bureau of Sanitary Engineering, N. C. State Board of Health

The purposes of any program of milk sanitation are roughly three: First, to make the milk supply as safe as possible from the point of view of preventing epidemics of milk-borne diseases; second, to insure a clean product, free from dirt and of low bacteria count; third, to maintain the food quality of the milk by providing minimum standards of butter fat and other solids, and preventing skimming and watering. These three divisions are all so closely inter-related that it is difficult to discuss one without getting into the range of the others. Moreover, although not strictly an item of sanitation, any program to promote these objects should also be such as to call for the least expense to the dairymen, to increase rather than decrease production, and to increase consumption by establishing public confidence in the product.

Under the head of safety, the outstanding requirement is that the milk be kept free from pathogenic organisms. Those which find in milk an acceptable medium for growth, and when present may be the source of an epidemic, are commonly held to be tuberculosis, typhoid fever, amœbic and bacillary dysentery, scarlet fever, diphtheria, and septic sore throat. Tuberculosis infec-

tion of milk may come from a diseased cow or from a tuberculous milk handler. Its elimination from raw milk calls for repeated tests of the herd, with removal of all reactors, and periodic physical examinations of milk handlers to eliminate open cases of tuberculosis. Typhoid and dysentery infections of milk are generally caused by milkers whose hands are soiled with infected feces or urine. The milker may be a carrier himself, either fecal or urinary or both, or he may be in the early stages of the disease. Specimens of stool and urine from all milk handlers for the detection of possible carriers, and prompt report of the occurrence of diarrhoeas to the Health Officer are the only practicable means of protection we know of. To further complicate matters some carriers may be intermittent, and certain specimens may be free from infection. A negative report is, therefore, not conclusive, and the examinations should be repeated, particularly in cases with a past history of typhoid fever. Scarlet fever, diphtheria, and septic sore throat infection of milk are probably caused by milkers whose hands are soiled with infected nose or throat discharges. Protection against these infections is most unsatisfactory, and consists in the prompt reporting

to the health officer of cases of sore throat or rash. Mild, atypical and missed cases further reduce the efficiency of protection.

The residence of milk handlers in a house where a case of one of these communicable diseases exist and the return of milk bottles from such premises to a dairy are subjects for regulation. Considering the possibilities for infection at the dairy and the inefficiency of practicable preventive measures, we feel that although the safety of a raw milk increases as the precautions surrounding it increase, no milk in its raw state is entirely safe at all times. The final safeguard is pasteurization, *properly carried out*.

One question which I particularly wish to bring before you health officers has caused no little worry. The state laws and quarantine regulations provide for the control of cases of diphtheria and typhoid fever, but are singularly silent as to carriers. A few typhoid carriers have been found on dairy premises. In such cases what measures can legally be taken for the protection of the public health? I ask particularly with reference to counties without a health department, and where the city concerned is not the county seat. Would a state regulation prohibiting typhoid carriers from working in dairies, milk plants, or otherwise as food handlers be desirable?

The cleanliness of a milk supply might be considered to be an entirely esthetic consideration, but that is only a part of it. The cleanliness of the milk is an index of the care taken in its production and handling, and is reflected by its bacterial content. Dirty milk and milk of high bacterial content generally go hand in hand with digestive disturbances of children. While the bacteria present may be harmless in themselves, they may produce changes in the composition of the milk that render it unsafe for infant feeding. The lower the initial bacterial content can be kept by clean methods of production, and the lower it can be maintained subsequently, the more nearly the milk will remain in its natural state.

Ayers, Cook and Clemmer, of the Dairy Division, U. S. Department of Agriculture, have demonstrated by a

long series of tests that it is possible for the average dairyman on the average farm, without expensive barns and equipment, to produce milk which has when fresh a low bacteria count. This can be obtained, even under filthy barn conditions, if careful attention is given to three factors, namely, sterilized utensils, small-top pails, and clean udders and teats. Common decency alone should not permit the production of milk under such conditions, for which no legitimate excuse can be conceived. It seems evident, however, that undue emphasis has been given to factors and methods of minor importance, while those which directly affect the bacterial content have not been sufficiently emphasized.

In the matter of equipment there should be a milking barn with concrete floor, containing 500 cubic feet of air space per cow, and provided with not less than three square feet of light per cow. The walls should be white-washed or painted with cold water paint. Such a barn can be cleaned easily and the floor washed after each milking. Floors kept in clean condition offer no attraction to flies, and the barn will be practically free from them. Screening a barn is undesirable as it cannot be completely done, and makes the barn in effect a fly-trap. Manure should be removed and handled in such a way that it will not become a breeding place for flies. Spreading on the land seems to be the method of choice. During the winter months when the ground is soft it may accumulate for a while, but there is then no possibility of fly breeding.

There should be a concrete-floored milk house, near the barn, well lighted and screened, and painted on the inside. By locating it near the barn, each pail of milk can be strained in the milk house, without causing undue loss of time to the dairyman, and where it will be free from flies and barn odors. All the operations of straining, cooling, bottling and capping are to be carried out in the milk house, as well as the washing and sterilizing of utensils and bottles.

An adequate water supply from a safe source piped to the barn and milk house is an essential on a dairy of any size, to facilitate cleaning.

To prevent possible fecal contamination by flies, nothing less than the state standard pit privy should be tolerated on the premises.

The methods used are of even greater importance than the equipment. Sterilized utensils have been found to be the most important factor in producing milk with a low bacteria count. The most efficient method is to use steam. A closet can be constructed in the milk house with insulated walls, large enough to contain all the utensils, cans and bottles, and into which steam from a boiler can be introduced. Experience and experiment have shown sheet asbestos board, wood, and hollow tile to be the most efficient heat retainers, as well as the lowest in cost. Brick and concrete are the poorest. Wooden closets are built with double walls separated by a dead air space, which is an excellent heat insulator. The boiler used should preferably be at least five horsepower, and the steam can be used for other purposes such as driving a brush for bottle cleaning and heating water for washing. The requirement for satisfactory sterilization should be a temperature of not less than 160 degrees F. maintained for thirty minutes, which can be checked by a thermometer inserted through the side of the closet. Tests of many such boxes over the state have shown that this requirement is frequently exceeded. The use of hot water for sterilization is only effective when utensils can be boiled in water, and is much less likely to be done properly. It requires more fuel, takes a longer time, and is awkward to manage.

The use of small mouth milk pails will exclude much of the dirt and hair that would otherwise fall into the pail during the milking, and has a marked effect on producing low bacteria count milk.

Finally, the cows should be cleaned before milking, and milked with clean dry hands. Gross dirt can be removed from the flanks with a curry comb, and this should be followed by washing, including the udders and teats. A brush is better for this purpose than a cloth, and much more handy. The brush will remove loose hairs, dandruff and other particles which would be matted down by a wet cloth and left to drop off when dry during milking. It is desir-

able to use a small amount of a chlorine disinfectant in the water used for the washing, either B-K, Steri-Clo, or the solution that can be made up from commercial chloride of lime. This has a distinct germicidal effect on the udder and teats as well as on the milkers' hands. Furthermore, if one cow should have an undetected mastitis, it would prevent carrying this infection to other cows through the medium of the wash water. Bottles are capped by hand and in this operation the fingers necessarily come in contact with the under side of the cap which will be next to the milk in the bottle. It is desirable that the hands of the capper be dipped in this disinfectant solution to avoid a possible contamination of the cap. Having the milk in the bottle, and presumably with a low bacterial content it is necessary to keep it at a temperature of 50 degrees F. or lower in order to prevent the further growth of bacteria. Marshall's Microbiology gives a table showing the effect of temperature on bacterial growth in milk. Seven samples of the same milk with an initial bacteria count of 5,000 per c.c. were held for twelve hours, one sample at each of the following temperatures: 40, 45, 50, 55, 60, 70 and 80 degrees F. The samples were then plated and counted. The counts were as follows:

40 deg. Sample.....	4,000
45 deg. Sample.....	9,000
50 deg. Sample.....	18,000
55 deg. Sample.....	38,000
60 deg. Sample.....	450,000
70 deg. Sample.....	8,800,000
80 deg. Sample.....	55,000,000

It is for this reason that all authorities are agreed that milk should be cooled to a temperature of 50 degrees F. or below and maintained at that temperature until delivery.

Under the head of quality I refer to the chemical composition of milk. The State and Federal standards require a minimum of 3.25 per cent butter fat, and 8.5 per cent solids other than fat. Some herds entirely of Holstein cattle may have difficulty in producing milk of even this standard; others, such as Jersey and Guernsey herds will far exceed this. The requirements should define milk as the "whole" lacteal secre-

tion, etc., to prevent the removal of cream or the addition of water. Aside from fraud, the chemical composition of milk is of interest to the health officer from the nutritional and dietetic standpoint.

Milk produced under the conditions outlined should be of low bacteria count, and as safe as raw milk can be made to be. To provide for such production requires more than an ordinance. The services of a competent inspector are required, and one with the personality to win the confidence of the dairymen. Laboratory facilities for the bacteriological and chemical examination of milk must be available, and someone competent to carry out the analysis. These necessities can be provided in different ways to meet the circumstances of each individual city, but they should be satisfactorily arranged before a milk ordinance is passed. Otherwise the project will be a failure.

In his paper last year at Pinehurst Mr. Miller discussed at some length the Standard Milk Ordinance, approved by the State Board of Health and recommended by them for local adoption. I do not intend to repeat at this time, except to say that the requirements suggested in this paper are embodied in the Standard Ordinance. However,

by providing for grades of milk, the Standard Ordinance gives the dairyman a powerful incentive to produce the best, and increases public confidence in the product.

There are now thirty-five cities in the State which have adopted the standard Milk Ordinance, and in which the State Board of Health is bringing about uniformity of inspection judgment and interpretation, to the end that Grade A in one city will have the same significance as Grade A in any of the others. The last report from the Public Health Service stated that the ordinance had been approved as standard in ten other states, namely, Alabama, Texas, Missouri, Kentucky, Tennessee, Virginia, Arkansas, Louisiana, Mississippi and South Carolina. The ordinance has been independently adopted by the cities of Rochester, Minnesota, and Athens and Atlanta, Georgia. The total is eleven states and over one hundred cities, of which thirty-five are in North Carolina.

During the week of May 28, 1926, at the meeting of the State Health Officers with the Surgeon General, the Committee on Standard Ordinances reported it as satisfactory with a few minor modifications, and the ordinance was adopted as standard for the United States by the Conference.

THE CARE OF THE TUBERCULOUS PATIENT AFTER LEAVING THE SANATORIUM

By J. W. DICKIE, M.D., Southern Pines, N. C.

In any case of tuberculosis recovery depends upon a reasonably early diagnosis, followed by treatment preferably in a sanatorium under competent medical supervision until the disease is arrested, and then by proper supervision of the patient after discharge.

I shall first discuss briefly the treatment in the sanatorium, because it is so closely allied to the care and supervision of the patient afterward.

The best sanatoria leave much to be desired. However, the average sanatorium offers superior advantages to anyone with active tuberculosis. Physicians treating large groups of patients

under identical climatic conditions have an opportunity to observe the advantages to the patient of treatment in a sanatorium, over that in a private home.

The mistake most frequently made is a needless delay in seeking institutional treatment. The patient almost invariably seeks such care when his condition becomes desperate. If the importance of such a course is impressed upon him, and he is made to realize that one goes to a sanatorium to get well, not to die, he may, in most cases, be induced to go early.

With very few exceptions, the results of proper sanatorium treatment are most gratifying, where a reasonably early diagnosis has been made. The patient may as well know at the beginning, that the period of treatment requires all the way from five months to two years, depending on the extent of the involvement, the degree of activity, the resistance of the individual to tuberculosis, and his ability to adapt himself to the cure.

Frequently, patients leave before a result is obtained, or, they may go from one sanatorium to another, usually with results disappointing both to the patient and the sanatoria concerned. They are often encouraged to act thus by well meaning friends and relatives. Every patient can find a plausible excuse to leave if he wills to do so. Frequently financial embarrassment is the reason given; yet it is significant that desperately ill patients are rarely forced to leave on this account.

If the period of treatment be divided into three stages—bed rest, chair rest, and graduated exercise—it is of the greatest importance for the patient to remain in the sanatorium during the period of graduated exercise, under the closest supervision, where every hour of the twenty-four is accounted for. It is difficult to explain satisfactorily to a patient and his family the necessity for continued institutional care after all symptoms have subsided; especially when there has been a gain in weight of from fifteen to fifty pounds and the patient looks and feels better than ever before in his life. The patient usually reaches this point of the cure by the time he has completed the period of bed rest and chair rest and before he has begun the very important exercise period. At frequent intervals, while the patient's exercise is being increased, a careful chest examination by a competent physician is necessary. The difference between omitting or completing the third stage of the cure, is often the difference between a permanent cure and a temporary arrest. After an early return home, "patched up," many patients break down again in a few months or a few years, and must return to the sanatorium when most likely it is too late to effect a cure. Such cases represent a very large percentage

of the fatalities in institutional practice.

With the exception of a small percentage of cases where we resort to such measures as tuberculin, heliotherapy, thoracoplasty, and pneumo-thorax, the treatment is so simple that it is difficult to convince the patient of its importance; yet its simplicity is its virtue.

The question is often asked: Is there a specific for tuberculosis? The answer is, Yes. The specific is REST. In truth I regard it as near a specific as we have in the field of medicine. Not rest in the sense of stopping work and "taking it easy," but rest as it is used in treating a fracture. Then we immobilize the part by the use of a cast or splints. Nature also protects the man with a fractured bone; for, in the attempt to use the part, such pain results as to force complete rest while the tissues are healing. The same is not true in the case of a diseased lung where the patient has little or no discomfort. If complete rest is necessary to obtain the best result where the tissue is merely the seat of an injury, how much more necessary it is, then, where the tissue, as in the case of tuberculosis, labors under the greater handicap of being diseased!

The period of complete bed rest must continue until the disease is quiescent, whether the time required be six weeks, six months, or longer. The end of this period may be determined by a careful chest examination in conjunction with stereoscopic X-ray films of the lungs. If the average case requires eight months in the sanatorium, about half of that time is taken up by the bed rest period.

The period of bed rest is followed by a period of chair rest, of from six to twelve weeks, depending on the length of time spent at rest in bed, on the nature and extent of original involvement, and on the re-action to chair rest.

The period of chair rest is followed by a period of graduated exercise, which requires a minimum of two months. Before leaving the sanatorium the patient should be taking at least one and one-half hours exercise a day. The exercise period determines the patient's limitations; how much he is going to

be able to do and how safe he is going to be in doing it. The patient gets his rest in bed—the exercise period determines whether he keeps it or loses it.

There is no "diet" for tuberculosis. In the absence of any complications, patients do best on wholesome, nourishing food, such as normal healthy people enjoy, with the addition of from a quart to a quart and a half of milk a day. The routine use of raw eggs, the old stand-by of former days, is to be severely condemned. Very few healthy people can properly assimilate any large number of raw eggs for any length of time, and the effect of several raw eggs a day on a patient's appetite is disastrous.

Dry, fresh air in an invigorating climate with an abundance of sunshine is an important aid to treatment. Sanatoria are usually so located and constructed as to give patients the greatest advantages in this respect.

To sum up, properly regulated rest and exercise, proper nourishment, fresh air and sunshine are our most dependable weapons against tuberculosis.

The patient, leaving the sanatorium as an arrested case of tuberculosis, has learned the significance of the word REST and its importance. He has experienced the well-being which results from taking proper nourishment at regular hours; he no longer feels comfortable or at ease in a poorly ventilated building, and he knows the joys of a sleeping porch, regardless of the season; he has learned a rare lesson which will go far towards insuring his success in after years, namely, self control.

Of immediate concern to him is the advisability of returning to his former home, his greatest anxiety is about climatic conditions. In recent years we have changed our ideas about climate. It is no longer the prime requisite to the patient leaving the sanatorium. Rest, not climate, is now the pre-eminent consideration in treatment; and the patient's activity or occupation is likewise the great consideration after leaving the sanatorium. To be sure, some discretion must be used; but it is safe to say the tuberculous individual, with his disease thoroughly arrested, may live in any climate suitable for the

average well person. The patient who returns home from the West or any of the well known health resorts in the East and has a relapse, does so not because of climatic conditions at his home. He may look the picture of health but, in tuberculosis, there is nothing more deceptive than appearances. Sometimes he has not completed his cure and his disease is not arrested. Many times he returns to the environment and occupation which precipitated his illness in the first place, and tries to make up for lost time. In truth, what counts is this: not *where* they live, but *how* they live.

Whenever possible, a period of from one to three months and sometimes longer should elapse between the time the patient leaves the sanatorium and the time when he resumes his regular occupation. He needs this period to readjust himself.

We have also changed our ideas about the occupation of the ex-patient. We used to regard outdoor work as best, nay as essential, regardless of how strenuous it might be. The bookkeeper was advised to become a cowboy, the banker a farmer. Experience has taught that this may be the worst possible advice. The ex-patient must avoid any work which requires excessive physical effort. Sedentary occupations are very much to be preferred, such as writing, teaching, bookkeeping, banking and the like. The hours of labor must be rational. A normal, healthy man is not at his best for any considerable period of time if he attempts to do more than eight hours' work a day regularly. The same is doubly true of the person who has had tuberculosis. A complete change should not be recommended except in rare cases, and then only after due consideration. A man can make a living with less effort and in shorter hours in a job he knows than he can in an unfamiliar work, for which he is not trained. It, therefore, often happens that an ex-patient is safer in his old unfavorable work than in a new more suitable occupation.

The hours spent in recreation and rest are of quite as much importance as the hours of labor. At least ten hours of every twenty-four should be spent at rest in bed; asleep if possible.

Two hours of this time should be spent as a rest period immediately following the midday meal. If the person's work is so arranged as to make this possible nothing will do more to insure him good health than a daily "siesta" following the midday meal. He must avoid any diversions which entail considerable exertion. Tennis is to be avoided, and golf is not advisable for a long time; especially if his lesion has been very widespread or very active. Diversions such as the movies, card games, auto riding and the like are safe and pleasant. The patient must be strongly advised against any former indiscretions or dissipations such as excessive smoking or drinking.

The physician's advice will be sought in regard to marriage or, if the individual is married, as to the advisability of having children. In the case of marriage, the advice of physicians is conflicting. In general, the physician who is tuberculous takes a more liberal view. The physician who is not tuberculous, the more uncompromising view. If a person has had tuberculosis, has become an arrested case, and remains well for two years, I believe marriage is justifiable, provided the patient's financial condition will make it possible to weather the storm in case of another breakdown. After all, marriage of the tuberculous is largely an economic problem, for tuberculosis is not hereditary. If the second breakdown means financial dependence on relatives or friends, or even worse, if treatment will be impossible, marriage is to be strongly condemned.

When the patient is already married, the question of children depends first of all on his or her physical condition. There is a grave hazard attached to childbirth and the care of the child for the mother who is tuberculous. Even in incipient cases a period of not less than two years should elapse between the time of her assured arrest and the birth of her child. This, too, is in part an economic problem. In some respects the children of tuberculous parents have advantages over other children. Their parents know something about tuberculosis and the general rules of health. They will safeguard the health of their children more than the average parent. Their children are likely to

have greater advantages in the way of health, education and the selection of an occupation. For these reasons, the advantages may more than counterbalance any disadvantages in being the offspring of tuberculous parents.

Now, as to the last and most important consideration in the treatment of the patient after leaving the sanatorium. While under treatment he has become dependent on his attending physician for encouragement and advice. Being deprived of this anchor on his return home, the reaction is inevitable. He is prone to become unduly anxious about himself and to imagine all kinds of things are going to happen to him. This state of mind in itself is sufficient reason for insisting that the patient be under the watchful care and guidance of his family physician for a period of at least a year after he leaves the sanatorium. The duty of the home physician is, first of all, to assure relatives and friends that the patient's germs have been "bottled up" and he is no danger to anyone, but to enjoin him to always take the same precaution he was taught to take. This relieves any embarrassment or anxiety for the patient or his family.

The home physician should make a careful chest examination at regular intervals for at least six months; or better, for a year. If the physician practices care in his examination and shows interest in the patient's welfare, the latter will look forward to these occasions. These examinations give the patient the assurance he needs so much. They make it possible to detect the first signs of a relapse and, incidentally, it gives his physician a splendid opportunity to become more proficient in every detail of chest examination.

Usually it is advisable for the patient to return to the sanatorium at the end of six months for a thorough examination where all his previous records are on file and where, by comparison, any very slight change may be more surely detected. This examination should include stereoscopic X-ray films of his chest. If the patient leaves the sanatorium with this understanding, he takes better care of himself in the meantime. More than anything else he wants a good report when he returns

for his examination. Further, it is during the first six months following discharge he is most likely to relapse. If he remains well for a period of six months, his life from that time on may be spent more nearly as is that of other normal, healthy individuals. To paraphrase the words of the Apostle of Old: "For the patient who has fought a good fight, finished his course and kept the faith, there is laid up a reward of health and happiness."

In conclusion, I believe there is no other chronic ailment to which mankind is heir which responds so readily

and successfully to proper treatment as does tuberculosis. Could we teach the public to fully appreciate the value of health; were all physicians able to recognize the earliest signs and symptoms of tuberculosis, were proper sanatorium facilities available for every victim of tuberculosis, had we the proper coöperation between physician and patient, then in a short span of years, the great white plague would be as infrequent as typhoid is today, and the victims of this dread disease would no longer be counted by the hundreds of thousands.

SUNLIGHT AND HEALTH

By the Children's Bureau, U. S. Department of Labor

A New Discovery of an Old Power

The treatment of disease with sunlight, known today as heliotherapy, is as old as the science of medicine, but the scientific use of sunlight for certain forms of tuberculosis and for rickets is as new as the twentieth century. If we look into historical medical literature we find, now and then, references to sun baths for the sick, but we find almost no mention of prevention of disease with sunlight. On the Island of Cos in about the year 400 B. C. Hippocrates, the father of medicine, advised sun baths and built a temple to Aesculapius, the god of medicine, to serve as a solarium for his patients. From the time of Hippocrates until the beginning of the Dark Ages, Greek and Roman physicians continued to recommend sun baths for the cure of disease. In modern times heliotherapy has been practiced more or less in France since the end of their eighteenth century. The first specific use of sunlight for the treatment of tuberculosis was made by the physicians of Lyons about 1840, but it was not put on a sound scientific basis until 1903, when Rollier opened his clinic in Switzerland. Today many hundreds of children and adults with bone and gland tubercu-

losis go to Switzerland to be treated with sun baths. After many years of experience Rollier has established a system of graduated sun baths which have as their ultimate goal thorough pigmentation of the skin of the whole body and not sunburn. The altitude in Switzerland insures a coolness of the air as well as great intensity of sunlight. The heat of the sun is useful in heliotherapy only in the winter, and must be avoided at midday in summer even in the mountains. The best heliotherapy consists of light baths and not of heat baths, and may be practiced at any altitude or in any place where the sunlight is clear. This method of treating tuberculosis became so successful in Rollier's clinic that it has been initiated in all parts of Europe and this country. Switzerland is no longer the only place where tuberculous children may be seen playing naked in the sun or lying on outdoor sun porches. In many parts of this country, whether at the seashore or in the mountains, just such scenes are common today.

Sunlight and Rickets

Rollier, the Swiss physician who first established the treatment of tuberculosis by sunlight on a scientific

basis, did not limit his use of sunlight to the cure of tuberculosis. In 1910 a school was opened under his supervision where the influence of sunlight in the prevention of tuberculosis could be demonstrated. That this "school in the sun" was a success is shown by the ever increasing number of so-called preventoria which are springing up in this country for children known to have been exposed to tuberculosis. If sunlight is good for the cure of tuberculosis in older children, it is also certainly good for its prevention in younger ones. In 1916 a small volume was published in France by Dr. G. Leo urging the use of heliotherapy for the prevention of tuberculosis in infancy. Simple straightforward directions were given for sun baths for babies, but apparently they attracted little attention either in Europe or in this country. In recommending heliotherapy for infants Leo thought only of its value in preventing tuberculosis. Little did he realize that in so doing he was advising a procedure which would also prevent another and more common disease of infancy.

To many people today, moreover, heliotherapy implies only the cure or prevention of tuberculosis. Our conception of the value of heliotherapy must be widened to include the cure and prevention of rickets as well as that of tuberculosis. Recent medical investigation has shown that sunlight has an absolutely specific effect in the prevention and cure of rickets and is indispensable for the normal growth of infants. Rickets as a chronic nutritional disturbance has been known to physicians for over 250 years, but the importance of sunlight in its cure and prevention has only been known definitely for the past seven years. The true value of sunlight in relation to rickets was first suggested by an Englishman in 1890, and reiterated in 1912 by a French investigator, but actual proof of its value was not obtained until 1919 when X-ray photographs of the bones demonstrated that rickets could be cured by ultra-violet radiations. Two years later, 1921, investigators showed that cure could be brought about by sunlight alone.

"Bottled Sunshine"

For over a century and a half cod-liver oil has been known to exert a favorable influence in rickets. Proof that cod-liver oil had a specific curative action in rickets, apparently similar to that of sunlight, was obtained in this country in 1921, and the cure demonstrated by X-ray photographs of the bones of rachitic children. As a result of even more recent experiments it is probable that the action of sunlight and cod-liver oil in the cure of rickets is the same, and that the oil from the liver of the cod fish has acquired its antirachitic power from the sunlight passing through the water to the fish or to the plants eaten by the fish. It has been definitely shown that vegetable oils, milk, green vegetables and grains may also acquire this antirachitic power if treated with ultra-violet radiation. When cod-liver oil is ingested by the infant the antirachitic power which it has stored up is liberated, to regulate metabolism and cure or prevent rickets. Thus cod-liver oil may truly be called "bottled sunshine."

The Children's Bureau has conducted a rickets demonstration in New Haven for three years. Every mother coming to our clinic is shown how to give her baby cod-liver oil. The following routine is followed. Babies seen before the end of the first month of life are given one-half teaspoonful of pure cod-liver oil twice a day. During the second month the dose is increased to one teaspoonful twice a day. Gradually this dose is again increased so that it amounts to one and one-half teaspoonsfuls twice a day or even one dessertspoonful twice a day at the end of the third or fourth month. It has been found that this amount of cod-liver oil is well tolerated by babies, and that it can be successfully given in summer as well as in winter. During the hot summer months, the oil is best given in the early morning and at night. The bottle of oil should be kept cool.

The Ultra-Violet Rays of the Sun

Sunlight, as we see it, is only a very small part of the radiations given off from the sun. When the visible light

from the sun passes through a prism it is broken up into its component parts to form the well-known spectrum of colors, red, orange, yellow, green, blue, and violet. Beyond each end of this visible spectrum there are invisible radiations, at the red end, the heat waves, at the violet end, the ultra-violet rays. The ultra-violet radiations are few in number compared to the heat and visible light, but it is these rays which are of such importance to animal life, destroying bacteria, stimulating the healing process in tuberculosis, and preventing or healing rickets. The intensity of these ultra-violet radiations as they reach the earth's surface varies greatly with the season of the year and with the condition of the atmosphere. In the north temperate zone the intensity is greatest when the sun has reached the most northern point in its circuit, that is about June 21, and least when the sun has reached the most southern point, December 21. During the day it has been shown that the intensity is greatest between ten and two o'clock. If the day is cloudy or if there is smoke or dust in the atmosphere, the intensity of the radiation is greatly diminished. Ultra-violet radiation is less, therefore, in congested smoky cities than in the open country. When the radiations from the sun pass through solid substances certain rays are filtered out. Black silk, for instance, will permit the passage of heat rays, but is opaque to the visible and ultra-violet rays. Window glass permits the passage of visible rays and heat rays, but is opaque to the ultra-violet rays. By dressing ourselves in heavy clothing and by living behind glass windows we are depriving ourselves effectually of most of these valuable ultra-violet radiations. It is only when the rays strike directly on the bare skin that they can be absorbed by the body. Pigmentation of the skin is the evidence that the body is reacting to the radiations. Ultra-violet radiations of great intensity may be produced artificially by a mercury vapor quartz lamp or carbon arc lamp and may be used therapeutically as sunlight is used, though in smaller doses.

Sunlight as a Preventive of Rickets

The need to prevent rickets among young infants cannot be emphasized too much. In the central and northern states rickets in a greater or less degree is a nearly universal condition among young infants, whether breast or artificially fed. Approximately one-third of all city children show either moderate or severe deformities of rickets. It is true that the most severe cases are found among the dark-skinned races, but mild and moderate degrees of the disease occur among the fair-skinned races to an extent not realized until recently when the X-ray has been used to help make the diagnosis. If these fair-skinned infants receive antirachitic treatment, that is if they are taken outdoors into the direct sunlight and if they are given the antirachitic factor in cod-liver oil, the mild degree of rickets demonstrable by X-ray will not develop into a more severe degree. Dark-skinned infants probably need longer exposure to the sunlight and perhaps larger doses of cod-liver oil to attain the same degree of control of rickets as fair-skinned infants. This may be due to the fact that the natural pigmentation of their skin, acquired as protection from the intense sunlight of the South, overprotects them from the northern sunlight. If rickets is not allowed to advance beyond a slight degree, there are probably few if any bad results. It is the rickets which is allowed to go untreated which carries deformities in its wake and with which anemia, bronchitis, pneumonia and sometimes convulsions are associated. Bony deformities of the extremities, such as bow legs, severe knock-knees, and flat foot are to be deprecated because they interfere with the correct use of the body; bony deformities of the chest are frequently associated with chronic bronchitis and recurring pneumonia; bony deformities of the pelvic bones are responsible for a large proportion of difficult and operative deliveries of women in childbirth, to say nothing of injuries to the infant during such difficult delivery. A large percentage of convulsions of infants under one year of age is due to tetany, a condition associated with rickets.

Babies with rickets are particularly prone to respiratory infections, to anemia, to malnutrition. If rickets can be controlled from its very incipiency in the first months of life these untoward results will be avoided.

The Spring Sun Bath for the Baby

As the spring days get warmer, usually by the first of April, the area of the baby's skin exposed to the sun may be increased by rolling up the sleeves to the elbow, for five or ten minutes. Each week thereafter the duration of the sun bath on head and arms may be increased five or ten minutes, the amount depending on the rapidity with which pigmentation or tanning takes place. Early in April, depending somewhat on the climate or weather, the stockings may be taken off, at first one at a time, later both together, for five or ten minutes each, thus exposing the leg and knee to the sun. The period of exposure of the legs must increase five or ten minutes weekly thereafter. By approximately the middle of May, when the baby's arms and legs have become accustomed to the sun baths and are tanned, more of the body can be exposed. The jacket and dress may be taken off for five minutes each day for a week, thus exposing the shoulders and neck as well as the arms and legs. As with the arms and legs, the period of exposure of the neck and shoulders should increase five to ten minutes each week. By the end of May the sun bath may be given with all clothes off except the band and diaper, and by the first or second week of June the baby may receive complete sun baths with no clothing. Care must be taken to gradually accustom each new part of the skin to the sunlight by starting with five minute exposure and increasing by five or ten minute amounts each week. By the first of June the face, head, arms, and legs may be exposed for approximately an hour, whereas the complete sun bath, including the trunk, will only last five or ten minutes. By the end of June, however, the complete sun bath may be given for from one-half to a whole hour.

Summer and Winter Sunbaths for Babies

Pigmentation or tanning of the skin and not sunburn is the end for which to strive in giving sun baths to babies. No absolute rule can be laid down as to how long this will take. The baby with fair skin will require shorter exposures at first in order to avoid sunburn, but may be given more frequent sun baths, possibly twice or even three times a day in order to hasten pigmentation. The baby with dark hair and dark skin will pigment more rapidly and longer exposures can be safely given. Negro babies may have twice as long exposures as white babies. Older children can usually have longer initial exposures than young babies. A general schedule such as this may be followed fairly closely, but no schedule will serve for all babies, and common sense must be used at all times to avoid sunburn.

During the spring months sun baths are best given between ten and one, but during the hot summer months they should be given earlier in the morning between eight and eleven. Once the child's body has become well tanned he can play in the sun several hours, provided he wears a light cotton shade hat. During the extreme heat of July and August it is better that the child should play in the shade between eleven and three. A child accustomed to complete sun baths in the summer can continue them late into the fall and can have partial sun baths on all sunny days in the winter. Outdoor sun baths may be started as described at any time during the spring, summer, or fall, but the duration of these initial exposures must depend on the season, those of the spring and fall being longer than those of July and August.

In the northern states during the winter months from November to March it is often difficult to give outdoor sun baths to very young babies. The heat of the sunlight which we would so gladly dispense with in July and August must be used to its greatest extent in winter and spring. It has been found that the temperature in winter may be forty or more degrees higher in the direct sunlight in

a place protected from the wind than in the shade. Babies born in the winter should sleep as often as possible outdoors in the sun during the morning nap and the sun be allowed to shine on the cheeks and face. During these months, moreover, partial sun baths may be given to babies indoors lying inside an open window. The window may be opened at the top or at the bottom, but it is important that the baby lie in the patch of sunlight which has come through the open space. During the indoor sun bath it is best to close the doors of the room to avoid drafts. The same technique may be used for the indoor sun bath as for the outdoor. Babies who have become accustomed to indoor sun baths in winter can begin outdoor sun baths in February or March.

Sun-bathing Suits

Sun baths need not be limited to babies. They should be continued throughout the early years of childhood. The more sunlight little children can receive the better they will withstand colds, infections and contagious diseases. During the summer many children are taken to the seashore or to the country where sun baths are easily given. On the beach wearing a sleeveless, low-neck bathing suit, or better still, a pair of bathing trunks, a little child can receive an ideal sun bath. After his body is once well tanned he can play several hours a day on the beach. In the country, however, or in the city, no one thinks of dressing a child in a bathing suit when he is playing in the fields or in the back yard. A pair of bathing trunks will serve as well for a sun bath in the country or in the city back yard as for a salt water bath at the sea or a fresh water bath at the lake. Sun bathing is much more important than sea bathing or lake bathing, and has the great advantage of being everywhere accessible in summer. Sun-bathing suits should allow as much skin as possible to be exposed, and may consist of a thin, short, sleeveless, low-necked slip or romper or a simple set of sleeveless cotton underwear which will leave the arms and legs and neck bare. During

the summer, clothes for children should be sleeveless and cut low in the neck. Bare legs and sandals should be the fashion from May until October, and children should vie with one another as to which one gets the best coat of tan. Doctor Salesby, of London, a great advocate of sunshine for children, urges us in his excellent book on "Sunlight and Health" not to let fashion dominate our choice of children's clothes.

The Rules of the Sun Bath

Though heliotherapy is as old as mankind its scientific application is almost as new as the century in which we live. Helio-prevention, if I may use a new word, is still more recent. Much of the success and popularity of sun baths will depend upon the enthusiasm with which small groups of parents welcome them for their children. All well children, whether strong or delicate, will benefit from sun baths properly regulated. If a child is not well, sun baths should be undertaken only under the direction of a physician, but in many instances better health will be coincident with the beginning of sun baths. Overenthusiasm in the use of sunlight must be avoided. Benefit is received even during the slow preparatory period when the skin is beginning to pigment. Harm may be done by too much haste. The rules of the game are as follows:

First: To progress slowly, but regularly, starting with a few minutes and working up to two or three hours.

Second: To watch for pigmentation of the skin, avoiding sunburn, and to increase the length of sun bath accordingly.

Third: To expose the arms and legs first and the body afterwards.

Fourth: To use the morning sunlight of spring, summer, and fall, and all the available sunlight of winter. In summer the head should be protected from the heat in the middle of the day.

If these general rules are followed, sun baths may be given to children of any age.



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SEPTEMBER, 1926

No. 9

HEALTH—THE STATE'S GREATEST ASSET



Above Poster by Mary Sekerak of Lincoln High School, Cleveland, Ohio, was awarded sixth prize in Nationwide Poster Contest conducted by Hygeia.

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly **THE HEALTH BULLETIN**, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
Cancer	German Measles	Scarlet Fever
Catarrh	Hookworm Disease	Smallpox
Care of the Baby	Infantile Paralysis	Teeth
Constipation	Indigestion	Tuberculosis
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Chickenpox	Measles	Typhoid Placards
Diphtheria	Pellagra	Venereal Diseases
Don't Spit Placards	Public Health Laws	Water Supplies
Eyes	Prenatal Care	Whooping Cough
Flies		

FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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COMMUNICABLE DISEASES IN JULY

For July reports to the State Board of Health showed a slight decrease in the incidence of whooping cough and more than sixty per cent drop in measles as compared with June. Both diseases, however, are considerably in excess of the number reported for July, 1925. The warning to parents is here repeated that they should exercise all possible care in shielding small children from these two diseases. Both are most dangerous to babies under two years of age.

Diphtheria reports showed a decline over the previous month, and were nearly one-half under July, 1925. When diphtheria does occur a specific remedy is available in antitoxin, provided that this is administered before the disease has progressed too far, and that sufficient dosage is given. Wise parents will protect their children, especially those under six years of age, by having

toxin-antitoxin administered by their physician or health officer. This makes the child immune.

The following is a comparison of the number of cases of communicable diseases reported in the State during July of this and last year.

Disease	July, 1925	July, 1926
Whooping cough	528	1,261
Measles	15	606
German measles	5	85
Diphtheria	112	60
Scarlet fever	42	54
Septic sore throat.....	1	5
Smallpox	56	101
Chickenpox	47	86
Typhoid fever	303	310
Meningitis	0	5
Infantile paralysis....	12	36
Ophthalmia neonatorum.....	1	0
Trachoma	2	0
Venereal diseases.....	481	416

ARE THE CHILDREN READY FOR SCHOOL?

The opening of school in the fall is an event to be looked forward to with a great deal of enthusiasm. For the children of school age nothing in the world can be so important as the unfolding of life into its full maturity. The primary purpose of school is to direct this unfolding and incidentally to give to the child facts upon which it can base reasoning and solve its own problems. The physically or temperamentally handicapped child cannot fully profit by this training.

When a soldier on the march gets blistered feet he must either drop out to be picked up and hauled by other soldiers or he retards the progress of the whole army. The army of school children are marching toward a definite goal and if they fail to reach

it on time the full victory is lost. This army of school children have for their goal efficient citizenship. It must be reached by the age of maturity when they are forced to take their place in the affairs of life. Any delay means failure to attain by this time the place they should have reached.

In school inability to travel with the crowd is a handicap to all others in school and imposes a hardship on the child himself.

When parents send children to school with handicaps which could and should be corrected, they do that which is unfair to their own child and unfair to every other child in school. To be sure schools, for their own protection, in many places make examinations and make corrections after schools have

begun. Every child should be examined by a school physician during the first days of school just as employees of any big business must pass a physical examination before being given a job. But for the child who has defects that need correction this time is already so late that time will be lost from school while the corrections are being made or the child will drag through the year in a half-hearted, half-efficient way.

If your own school has not already opened, it certainly will very soon and right now, today, have every child examined by your own doctor and be sure there are no remediable defects left to be found by the school physician.

If perchance your school is one of those which does not have a regular health officer or school physician to make entrance examinations of all children your community is to be pitied. After getting your own child ready for school, it is a shame to have it retarded by the negligence of another. Get your own child ready for school and then be sure that all others are ready. An examination is the only way of knowing this.

For the child's sake, for the school's and the state's sake, have every child examined and ready for school.

Do you know that it costs the taxpayers of North Carolina about \$50.00 extra for each child who repeats a grade in the public schools of the State? When it is remembered that there are several thousand children each year who fail to make the grades and must repeat, some of them spending as much as ten years to pass the third grade, it is easily understood what a gigantic unnecessary expense the State must bear. And much of this repeating is truly unnecessary for failure to make grades is in most cases caused by some physical defect which handicaps that child. So many of these defects, too, are easily remedied and at very little expense. This is the pity of the matter. The defects can be corrected, the child can be saved from hardship and a life of poor attainment, the State can be saved the gigantic expense of repeaters, and a greater citizenship in future years secured by parents now having children carefully examined and these remediable defects corrected.

START THE DAY WITH BREAKFAST

There is indication of a growing tendency to omit breakfast from the daily routine. As school time again approaches we will find many children neglecting breakfast in the rush to get to school on time. Some persons deliberately accustom themselves to do without breakfast in order that they may regularly have a few extra minutes in bed. Adequate sleep is absolutely essential but so also is adequate food. Burning the candle so late at night that getting up in the morning is a task is proof that the system is not getting adequate rest and relaxation. If in addition to inadequate sleep the body is deprived of food in the morning a double injury is done.

Investigation has repeatedly proven that there is a much higher rate of absence from work and from school among those who go without breakfast than among those who regularly eat an appropriate breakfast. There are two factors accounting for this. One is that doing without breakfast de-

creases efficiency to the extent of inability to go to work. Another explanation is that the person too lazy to get up in time to eat breakfast is so lazy that it requires little excuse to remain away from work. What is even more noticeable is the fact that the great majority of the children who are chronically tardy are the ones who come without breakfast. Those who get up too late to eat breakfast often get up too late to get to school or to work on time. Lack of time is a poor excuse for doing without breakfast, and persons who give this as an excuse had better rearrange their habits and go early enough to bed to get sufficient sleep.

There are, however, many persons who admit doing without breakfast but say it is because they are not hungry. This very often is true. Hunger is nature's call for building and repair material and fuel to produce energy. If, however, the digestive tract is out of order so that food is not properly

digested and assimilated then the natural feeling of hunger may be absent. From seven o'clock in the evening until seven o'clock in the morning is twelve hours and this time is much longer than is normally needed to digest food. The healthy person will have an empty stomach in the morning and will be calling for food. Every healthy animal seeks water and food early in the morning.

The person who omits breakfast because he has no appetite needs to give attention to the digestive tract. He is certain to have some trouble there that should be corrected.

With the present fad for "slenderizing" many persons omit breakfast thinking that thus they may reduce. In most cases such persons make up for this omission by eating more at the other meals. Instead of reducing the total food intake for the day, it is taken in the one or two heavy meals instead of being distributed in the three or four.

The experience of all time has proven that human beings get along better when the necessary aggregate amount of food is taken in three or four meals at regular hours with equal intervals. During the period of sleep the digestive apparatus may rest and that interval may be longest.

The glands secreting digestive fluids cannot perform this function if they do not have an abundant blood supply furnished them from which to get it. During the digestion of a hearty meal the intestinal and gastric blood vessels are dilated for the purpose of admitting this abundant blood flow to the digestive glands. If, after a hearty meal, one engages in violent exercise which demands an abundant blood flow to the muscles to supply that need then this blood is taken away from the intestinal and gastric glands. With a scant blood supply there is scanty secretion of digestive fluids, consequently an impaired digestion. For this reason active mental or physical exercise should be avoided after a hearty meal. It is a matter of common observation that all animals lay down to sleep when the stomach is full and persons feel sleepy in the afternoon when they have eaten a hearty midday meal. The blood being conducted to the digestive glands leaves

a minimum amount going to the brain. The result is drowsiness. It is also a fact that the foods which mainly furnish building and repair material require a longer time for digestion, while, generally speaking, the fuel and energy foods are much more quickly digested and assimilated. The logical conclusion, therefore, is that the heavy meals should be after the day's work is finished when there is time and blood to digest them, and when products of digestion may be utilized for repairing the tissues wasted by the work. The fuel and energy foods should be taken in the morning when fuel and energy are needed for the activities of the day.

To undertake active work without fuel and energy is like trying to run an engine without steam. The person who begins the day's work without breakfast drags through the day and accomplishes much less than would be possible with an appropriate breakfast.

What is an appropriate breakfast? is then a question which naturally comes to mind. First we must remember that a great amount of liquid is lost by evaporation through the lungs in the exhaled breath, and also from the skin surface of the body. Also the secretion of the kidneys fills the bladder reservoir. All of this means that during the night there has been a great drain of liquid from the blood and hence the first need in the morning is for fluids to replenish this loss. An abundance of water in the morning supplies this need and at the same time flushes out the stomach carrying with it quickly into the intestines any residue of food debris and digestive fluids, leaving the stomach fresh and clean to begin another day's function. While drinking water does this, it also stimulates to activity the muscles of the intestinal walls which leads to normal and easy bowel evacuation. With two or three or more glasses of water the first thing in the morning, the fluid content of the blood and tissues is replenished, the stomach flushed out and the intestines with their accumulated load of waste material and food debris are emptied. The whole system is in good condition for beginning a new day.

After this is done and fuel and energy foods are to be taken we must consider what the needs will be. This is determined by the activity of the individual and also the time when he will eat his next meal. Mental work uses up energy and fuel at about the same rate as physical work. The person doing hard mental or physical work will need a breakfast supplying much more fuel than the person doing routine work in a factory which requires little physical exertion and a minimum of concentrated study.

For the usual mixed family group where the adults have a moderately sedentary job in mill or factory, the ideal breakfast may consist of fruit, cereal, bread and beverage (children should not have coffee). Milk is always ideal for both children and adults. This breakfast is easily and quickly prepared and furnishes variety while it supplies the needs of each member of the group. To this may be added occasionally, eggs

and bacon and some sweets. Sugar, such as syrup, jam and preserves is a valuable fuel and energy food which is quickly burned up and leaves little to be stored up as fats. Sugars are not fattening but sugar supplies energy and permits the proteins and fats, the building foods, to be stored up as fats. Without the sugars these building foods would, if needed, be used as fuel foods. This gives grounds for the erroneous idea that sugars are fattening.

For the family whose work is very strenuous, either physical or mental, a somewhat heavier breakfast may be necessary. To the above articles may be added some meats and potatoes, or fish.

Except by the direction of a doctor for some specific reason, breakfast should never be omitted. "Well begun is half done," and the day started right with an appropriate breakfast will end with a consciousness of having more easily attained success.

OVERCOME BY AUTOMOBILE EXHAUST GAS WHILE RIDING ON REAR OF CAR

There have been reported in this and other states deaths, caused by exhaust gases from automobiles, of persons riding in closed cars. The following letter from a reliable citizen of this State calls attention to the danger of riding on the back of cars. The United States Army has found it advisable to direct the exhaust from the engine to the side of its ambulances because of the fact that gases from the underneath rear exhaust were drawn by suction into the open rear end of the ambulance to endanger its occupants.

It is noticeable that the back of a car traveling over dusty roads very soon becomes thoroughly covered with dust. This dust is drawn into the vacuum following the car body and top and settles on the car. Persons riding on a platform in the rear of a front seat and top are riding in this vacuum and obviously constantly inhale the gases from the exhaust. The conditions are the same as the ambulance closed in front but open in the rear.

The warning contained in the following letter is a real one and should be universally heeded.

"I thought I would write and ask you if it would not be advisable for the State Board of Health to issue a general warning as to the danger of children riding in the back end of coupe cars or roadsters. Two children yesterday, one of them being my boy, were overcome by the gases from the exhaust, and the boy was at the point of death when his condition was discovered. Fortunately my sister-in-law, who is a trained nurse, was along and took the proper steps to recover them and a doctor was procured in a few minutes, as the car had just reached the edge of town. The same circumstances might occur again without immediate help being available. It might possibly be the means of saving life, if the attention of the public was called to the danger."

Doctor: "I don't say all lawyers are villains, but you'll admit that your profession doesn't make angels of men."

Lawyer: "No—you doctors certainly do have the advantage there."

SANITARY CONDITIONS SURROUNDING THE HANDLING AND SALE OF FOODSTUFFS AS THEY RELATE TO INDIVIDUAL AND COMMUNITY HEALTH

"What are foods and what do they do?" must be answered before we can get very far in the subject of how to handle them. Strange as it may seem, there is little record of any really scientific attempt to answer this question until within the memory of persons yet living. A consequent result is that little progress was made in the handling of food until the present generation.

To be sure the discovery of a new world was an accident in the attempt to find an easier way of bringing spices from the east to preserve food. The need for spices was as preservatives and the flavor of them only an incident. Spices, originally used to preserve food and conceal a spoiled taste and odor has developed an acquired appetite for such artificially highly seasoned foods.

Columbus discovered America but failed to get his spices. Had he gotten them little would it have availed for the use of spices made little' progress in food handling.

The progress of science is a history of great discoveries of fact which become established, and of destruction of theories which are temporary mental conclusions shown later to be untenable. Until men knew what foods are and what they do they could not even with spices properly handle them.

Lavoisier, a Frenchman, showed that animal heat was due to a process of oxidation but he believed that the heat produced was caused by the union of oxygen with carbon and hydrogen in the lungs. Years after his death it was fully realized that the heat production was due to the oxidation of protein, fat and carbohydrate within the different organs of the body.

Carl Voit, to whom more than any one else the world owes its fundamental knowledge of nutrition, often said in his lectures "Continual decompositions of matter are always going on in the living cells, and the energy liberated in these decompositions is the power upon which the motions of life depend. Phenomena of life are phenomena of motion." Then Rubner, the most emi-

nent of Voit's pupils said "Mute and still, by night and by day, labor goes on in the work-shop of life. Here an animal grows, there a plant, and the wonder of it all is not the less in the smallest being than in the largest."

And here let us interject—when one comes face to face with nature, and seriously prays Almighty God to open his eyes to truth, he stands dumbfounded before the eternal wonder of life itself. Whether omnipotent God, on the spur of the moment, gathered up a handful of clay and said, "man, stand forth" or whether, following all of nature's unalterable laws, He, through millions of years, chiselled off defects here and added virtues there, does not change the wonder of life. Before man was, life was, and the life in me today and in every living thing has come down through an unbroken chain since the beginning of time. A dead thing cannot procreate. God is truth and life and if God is life and if God is from everlasting to everlasting without beginning or ending, then life has always been and always will be. The manifestation of life and the form of the living thing may change and is changing, growing more and more perfect to the perfect day, but life itself goes on and has come on, we know not whither nor whence.

The elements of the body are the elements of the earth, assembled by life to be utilized by life. Your motor burning fuel generates its own spark and continues to operate so long as the fuel lasts or until the spark is broken by worn out machinery. But in the very beginning there had to be your strong arm on the crank. However man may have attained his present physical form, his life was given him by preceding life.

Food is the fuel of life. It burns in the living body giving off heat and energy which when transferred into motion is the phenomenon of life.

A calory is the amount of heat required to raise the temperature of one litre of water one degree centigrade. When a gram of sugar is ignited by an electric spark in a strong steel

receptacle containing oxygen under a pressure of 450 pounds to the square inch, it is completely burned to carbon dioxide and water. When this steel receptacle is placed in a litre of water it raises the temperature 3.75 degrees C. Thus, sugar has a food value of 3.75 calories per gram. The evaluation of foods by calories is objected to by some as being unscientific. Be that as it may, it was this scheme of Rubner's that set the study of nutrition and food on the way to progress.

While calories express comparative values of food in terms of heat and energy, so also calories are used to express heat and energy expended by the living body. The person weighing 150 pounds in perfect health and lying motionless on the bed uses up calories at a constantly uniform rate. Accurate tests have proven that the same individual sitting up instead of lying down will use heat and energy at the rate of about 800 calories per day more. This is just exactly the same as the automobile which requires more gas with every raise in the road to maintain a uniform speed.

The number of calories needed varies with the body weight of the individual and the amount of activity and the temperature of the environment. Obviously, a very great deal more is needed when the person is doing hard manual labor in zero weather than if he were lying motionless in the shade where the thermometer registers 95.

Fats and carbohydrates are rich in fuel value, furnishing heat and energy while the proteins are used for building and repair material. Fuel foods are not used for repair but protein foods are, in emergency, used for fuel.

There are many other elements in food that are as essential to life and health as its caloric value. These are the mineral salts and acids and the vitamins. Perhaps many others we have not yet discovered.

Whatever destroys or disturbs any of these vital elements endangers health. In nature we find an excess of fats and carbohydrates in the winter foods and in summer more of the building foods. In the tropics little fuel is needed, hence the natural foods are mostly protein. In the arctics the loss of heat is tremendous, hence the food

is mostly fuel foods. There the Eskimo attains a healthy old age on a diet that would soon kill a man in the tropics. The secret of health is not primarily in the kind of food but it is in selecting the foods needed for the individual environment. Whale meat and blubber are as easily digested and as appropriate for food for the Eskimo as the orange and banana for the man in the tropics.

Modern transportation facilities make available for civilized man every form of food found on the earth. Fresh milk produced in Wisconsin is served in Miami as pure and as wholesome as when it left the cow. Fresh Wisconsin milk has been regularly served in London and Paris. South American bananas are eaten in Winnipeg and luscious Australian apples are sold in the markets of Europe.

Whether perishable foods are shipped to the ends of the earth or whether they are hauled two miles in the farm wagon, whether they are canned, preserved or dried, every step of the way must be carefully guarded lest they lose their value as food. Arriving in the hands of the consumer having lost their food value, they may do no serious damage and the loss be only economic. But unfortunately, the problem is not so simple as this. By the action of bacteria, wholesome food elements may be changed to dangerous elements. Foods contaminated by pathogenic (disease producing) bacteria may be the means and very often are the means of spreading contagious disease.

The number of cases of typhoid fever and enteritis in infants, transmitted by other vehicles than food, including water and milk, is so very small as to be almost negligible.

Contamination of food comes by way of flies mostly but may be by the direct handling by polluted individuals. Refrigeration inhibits the growth of bacteria but does not destroy them. Refrigeration is no excuse for careless sanitation. Food exposed to flies, dust and vermin, such as rats, mice, roaches and ants is exceedingly dangerous for human consumption uncooked. Today no intelligent person will buy from any dealer, articles of food that have not been protected at all times in fly-proof show cases. Every intelligent person

should look with much distrust on any store or market stall where he sees signs of rats, mice and roaches. The difference between the snake and the flea is that the snake crawls on its own belly while the flea is not particular. Flies and vermin are in no sense particular where they crawl and they carry disease and death to the innocent.

The wide awake health officer is really concerned more about people than he is about things. Diseases of people only come from people. Every food handler should be proven to be free from all contagious disease.

Carriers are persons who have developed sufficient immunity to a specific disease to counteract all symptoms of that disease, but not sufficient to destroy all bacteria. Persons apparently well may carry living typhoid germs in their system for years. When these germs are transferred to another person who possesses no immunity they immediately begin to multiply and produce

typhoid fever. This is only one illustration of many things that are thus transmitted by carriers.

Finally there must be mentioned one other menace to health,—and this is the nurse, the maid and the cook. All agree that the common drinking cup is now quite properly taboo. But how about the cook in the kitchen who sips from this or tastes of that, who visits the toilet and brings her polluted, unwashed hands and clothing to our babies and our table.

Babies are dear creatures but why should nurses, neighbors and friends on the street or in our homes kiss them so nonchalantly.

During the present century, fifteen years have been added to the average span of human life by the application of such knowledge as we have in matters of sanitation and suitable diet. We should not be fools or cranks about infections but we should be informed and then use common sense.

WHAT THE EDUCATED PERSON SHOULD KNOW ABOUT HEALTH

Addressing the American Public Health Association on the above topic at Atlantic City on May 18, Dr. Livingston Farrand, President of Cornell University, outlined the following "ten health commandments" with which every intelligent person should be familiar:

1. He should have a knowledge of the physiological basis for sound health habits, such as regular and sufficient hours of sleep, right posture, suitable exercise and proper elimination.

2. He should know the types and amounts and proportions of the various food elements essential to the proper nurture of his body.

3. He should have an acquaintance with the principles of normal mental action and the conditions underlying the more common variations from normal state of mind.

4. He should have a general understanding of the sex instinct in man—its stages of development, its normal expression and the values and penalties attaching to it.

5. He should have a knowledge of the factors determining infection and resistance and of the principles of arti-

ficial immunization in the case of certain of the common infectious diseases.

6. He should have enough knowledge of the causes and prevention of the degenerative diseases to offer a prospect of passing through middle life without a breakdown.

7. He should know and therefore be armed against health hazards lurking in the environment, such as polluted water and milk supply, congestion in housing, poisonous dusts of certain industries, infected soil, etc.

8. He should appreciate the necessity for frequent medical and dental examination.

9. He should have an intelligent basis for choosing wisely his medical and dental advisers, and for realizing that the modern practice of medicine is grounded on science, and not on mystery, fancy and tradition.

10. He should have a knowledge of the important health problems facing the community, of the methods of attacking those problems, and of the results to be expected from intelligent community action in the public health field.—*The New York Times.*

CHANGING CONCEPTS OF FEEBLE-MINDEDNESS

GEORGE K. PRATT, M.D.

Assistant to the Medical Director, National Committee for Mental Hygiene

In view of the current revival of public agitation concerning problems said to be created by the feeble-minded, the time has come when a readjustment and a clarification of facts and opinions on this subject may not be inappropriate. Medical science never stands still. Always there are being undertaken experiments and researches whose results tend to confirm, to modify, or to overthrow existing concepts. This is as it should be. Otherwise snug complacency and the common failing of being content with whatever for the moment appears reasonably satisfactory would smother both scientific curiosity and that ceaseless search which leads to knowledge.

Sometimes, however, the restlessness of these men of science annoys us. Why—we grumble—must they forever be challenging our current medical beliefs? Why can't they let well enough alone? And when their probing and their questioning and their experiments result in new discoveries that make untenable our former convictions, we balk like sulky children at the necessity for changing our habits of thinking. Of course we do change them eventually and even admit reluctantly that the new beliefs are an improvement. But in the meantime the period of readjustment often is marked by resistance and controversy.

The popular concept of feeble-mindedness at the present moment is passing through just such a period of transformation. For many years the problem of mental deficiency (feeble-mindedness) has generally been considered a gloomy one. We have been depressed by the paralyzing and fatalistic pictures of the Jukes, the Kallikaks, and other notorious families. Their forbidding charts that showed so convincingly the financial, health, and moral hazards arising from the

mating of a defective girl with a Revolutionary soldier (Kallikaks) filled us with helplessness at ever lightening the burden. As a result a tendency was displayed to accept the whole problem with a measure of that same resignation and philosophy that we reserve for such other inevitable phenomena as death, taxes, and the prevalence of poverty. And so the legend grew that *all* the feeble-minded inherited their defects, *all* were potential criminals, *all* were utterly unfitted for self-supporting community existence, and that *all* should be completely and permanently segregated in institutions.

Fortunately, both for the feeble-minded and the rest of us, some of the restless men of science whom we have mentioned began to turn their attention to this dismal concept. As a result, new hope is seen for a lightening of the problem as well as for the development of a program of practical salvage. The new concept of the feeble-minded is suggested under the following headings:

Causes of Feeble-mindedness

Formerly the transmission to the child of a faulty germ plasm by one or both parents was supposed to cause practically all cases of feeble-mindedness. Today it is established that a large percentage are due to some natal or post-natal condition. Among these conditions are birth injuries and infectious disease. The latter has been found specially likely to produce an arrest in intellectual functions if the onset occurs in the early months of infancy. Thus spinal meningitis, scarlet fever, whooping cough, "sleeping sickness," and similar infections may result in permanent injury to brain tissue involving the regions housing the intellectual portions of the cerebrum. When this occurs the resulting

mental deficiency is as actual in degree as though it were inherited from a long line of defective ancestors. An important difference, however, is found in the fact that no conclusive evidence has yet been offered to show that the injury is transmitted to the germ plasms of these many accidental or acquired cases. This means then, if the evidence later is confirmed, that the danger of such cases passing on the defect to a new generation is remote. Such a fact will be of tremendous practical significance, for it removes at one sweep the hereditary menace from approximately fifty per cent of all the feeble-minded.

Prevalence of Feeble-mindedness

Formerly it was thought the mentally defective were few in numbers. Now we know there are far more than was once suspected. No state has succeeded in making an actual census of all the feeble-minded within its borders, but numerous careful estimates have been made by conservative investigators. It is now established, for example, that at least two per cent of the school-age children in any given community are intellectually subnormal. It has also been estimated by Fernald and others that Massachusetts with a population of some three and a half million persons possesses at least 60,000 who are intellectually subnormal. Mental deficiency is found in many walks of life where heretofore it was not suspected because of the good adjustment to their environment of its possessors.

Criminal Tendencies

The new concept of the feeble-minded assigns to less than ten per cent of them any essentially vicious potentialities. And this ten per cent is comprised almost exclusively of the neglected feeble-minded. In other words, most of them, if given reasonable opportunity for training and supervision, lead sober, industrious, and well-behaved community lives. The small vicious group (known as "defective delinquents"), because of their spectacular careers, succeed in unjustly stigmatizing the entire class.

It is significant that in several recent psychiatric studies of jail inmates, the percentage of the whole found to be feeble-minded was relatively small. A recent survey* of jails and penitentiaries in New York, for instance, disclosed that only 7.6 per cent of the jail and penitentiary inmates studied were definitely mentally defective. Even when the borderline and dull-normal groups were added, the total percentage of intellectual impairment was only 20.3.

Industrial Possibilities

More and more is it evident that modern industry can use to mutual advantage many mentally defective individuals. This is specially true of those factories using a preponderance of automatic machinery. For monotonous and repetitive operations that are simple and easily learned such workmen often prove of unique value. This is also true of numerous other unskilled jobs where loyalty, patience, and routine habits are more necessary than superior intellectual endowments. It is important to note, however, that in such occupations those feeble-minded do best who have received some institutional training and who are occasionally supervised. Thus most of the upper level of the mentally defective group are capable of partial, and often total, self-support. Such an arrangement obviously is superior to life-long institutional segregation.

Segregation of the Feeble-minded

The new concept holds that only the vicious ten per cent and a number of the intellectually lowest types usually need permanent segregation in institutions. Many of the others may be given a period of institutional training for from two to four years, during which time they receive academic instruction up to the limits of their capacities and are then taught simple trades or domestic duties. Depending then largely on their personalities and the degree of adjustment to environ-

*Report of a Mental Hygiene Survey of New York County Jails and Penitentiaries. Conducted by the National Committee for Mental Hygiene. New York, 1924.

ment that they have exhibited, they are returned to their communities, where, under supervision, they go to work. Obviously no guarantees can be made for an absence of sexual promiscuity under such a program. Actually, however, experience has shown that the percentage of the feeble-minded under this plan who develop venereal disease or who give birth to illegitimate children is apparently no larger than in any other miscellaneous cross-section of the community of the same numerical strength.

Surgical Sterilization of the Feeble-minded

The new concept rejects surgical sterilization of the feeble-minded as an adequate solution to the problems this class creates. In the first place, our belief as to the number of cases where transmission of a defective germ plasm is probable is much changed, our fear of the feeble-minded as a social menace lessened, and our knowledge of their possibilities for social usefulness increased. Secondly, there are many practical difficulties in the way of ascertaining, accurately and justly, which individuals among the feeble-minded will become menaces to the community, or even which ones will certainly transmit their defect. Moreover, the sterilization of all feeble-minded individuals, it seems safe to say, would be followed by a serious increase in venereal disease and sexual promiscuity due to the removal of fears and inhibitions caused by the possibilities of pregnancy. The new concept concerning sterilization closely agrees with that offered by the Central Association for Mental Welfare of Great Britain, which, in part, says:

"The considered opinion of the standing Medical Committee of this Association is that sterilization is not at present time a practical proposition.

"It is very important to remember that although propagation by defectives is one of the causes of the spread of mental deficiency, nevertheless this is by no means the only social menace attaching to their presence in the community. If left unprotected and unguided, their lack of stability and control may lead them to commit se-

rious crimes, such as theft, arson, assault, and even murder. Their inability to maintain economic independence results in vagrancy and destitution. Their helplessness in the face of obstacles frequently brings about their complete collapse at the first rebuff which they have to meet.

"A sterilized defective would not be any less liable to these happenings than would one who was unsterilized. A defective woman, from the fact of her being sterilized and incapable of bearing children, would be more prone to illicit intercourse, to adopt a life of prostitution, and to spread venereal disease."

A Practical Community Program for Dealing With the Feeble-minded

Originally suggested by Fernald and since endorsed by other authorities, the following state program represents, in the opinion of most psychiatrists, the most practical working plan yet devised for dealing with mental defectives:

Identification, by means of routine mental examinations of school children three years or more retarded in their grades and by other devices.

Registration, at some central bureau for purposes of ascertaining size of problem.

Education, in special classes of public schools and in institutional schools.

Training, in simple trades or domestic duties during institutional residence.

Supervision, by trained workers both in jobs and in homes.

Segregation, permanently only for defective delinquents and for the lower, helpless group of feeble-minded.

If a prize had been offered, we are sure this would get it. This note was received by a county superintendent of schools in Illinois:

"As we ain't got no itch or lice in our school, we don't need no nurse."—Signed by the school directors. The reply was: "You may not have lice and you may not have itch, but you do have luna-ticks."

HOW TO BE POPULAR*

A RADIO TALK

ANNE T. BINGHAM, M.D.

Psychiatrist, Metropolitan Life Insurance Company, New York City

In going through a little mountain town during a recent motor trip, I saw in an undertaker's window the following arresting sign: "Why walk around half dead when we bury you for \$37.50?" Such a great bargain as that would not, I trust, appeal to many of my hearers, even though most of you are women, and, therefore, popularly supposed to snap at bargains of all sorts. Unless we are mentally ill, we do not want to be buried—even for \$37.50. We want to live and in such a wholesome way that our families and friends want us to live. More than that, we all want to be liked, to be popular.

I can give you the secret of popularity in one word—in cross-word puzzle phraseology, a word of six letters, signifying freedom from disease. I mean, of course, H-E-A-L-T-H. It will take more than a word, however, to defend my statement, to show you how all inclusive that word is. In the talks on *Health Positive*, which some of you heard in July by Dr. Lenna L. Meanes, Medical Director of the Women's Foundation for Health, emphasis was placed on physical health, and you were not told of four classes, ranging from those in Class A, who are living at their best, to those in Class D, who are actually ill.

Now, quite as important as *physical health positive* is *mental health positive*. One reacts on the other, it is true, but it is possible to have one to some extent without the other. We have all known people with serious, long-continued, often painful physical conditions, whose cheerfulness, unselfishness, interest in those about them and

in the affairs of the world have made us ashamed of our complaints about petty irritations. We have known, too, many robust persons whose discontent, or whining egotism made us want to flee from them. It is not so easy to put people into mental groups as into physical, as gradations are perhaps more subtle; but the range, of course, is from people who are making the best adjustments to life that they can, or those with definite mental or nervous illnesses. I suppose that most of you to whom I am speaking are up and about, probably most of you have a definite job. Whether this job of yours be that highly important one of making your home fit for your family and your family fit for living efficiently in the world, or whether it is teaching, or concerned with business, you need to be fit yourself, if you are going to adjust competently to the varying demands of each day.

The essentials of fitness and of popularity are not so different as they may seem to be at first sight. When we think of popularity, we are not apt to apply it to our families, but only to our neighbors, or friends, or fellow-workers. After all, however, it is a rather important factor in our physical and mental health that we do get on well with our families. Many a headache would be avoided, as well as much nervous indigestion and high blood pressure, if members of families showed the same courtesy and consideration for each other that they do for mere acquaintances. Family friction is a fertile source of what is commonly called a nervous breakdown. There is much food for thought in the remark of a well-known neurologist that his practice would amount to very little if sisters did not have to live together.

Perhaps you would have another name for the quality that helps people

*This is one of a series of health talks given over the radio under the auspices of the Women's Foundation for Health, 370 Seventh Avenue, New York City. Dr. Bingham is a member of its Board of Directors, and at the time this talk was broadcasted she was Psychiatrist of the Girls' Service League of America, New York City.

to get along smoothly with their family and friends. I think it is tolerance. If we lack this attribute, our popularity rests on a precarious foundation. It is a great asset to be able to see and respect the other fellow's point of view. If we have the gift of tolerance, let us cherish it; if we lack it, let us lose no time in cultivating it. Intolerance not only affects our relation with others, but it leads easily to unhealthy mental states in ourselves, as a result of which our personalities are warped by the development of such traits as corroding suspicion, smug egotism, and argumentativeness.

Oversensitiveness is a condition that does not make for popularity, and it certainly interferes to a serious extent with the maintenance of mental health. Have we not all suffered most unwillingly, because we somehow felt it was unnecessary, from people whose feelings, like rockers on a chair, are always in the way, ready to be stepped on or to trip up the unwary? These people whose feelings are so easily hurt seem forever to misinterpret what is said or done. We cannot be ourselves with them, if we are to avoid scenes. We feel constrained; we must weigh our words most carefully, trying to think ahead how they will be construed and be ready at any moment to explain our doings or sayings as tactfully as may be. These oversensitive individuals may exercise a most tyrannical power, and they do not endear themselves to those who come in contact with them. Oversensitivity is a quality that is apt to get the better of us, unless we see it in its true proportions as a serious personality handicap—one that may lead to bitterness, jealousy, seclusiveness, unhealthy brooding. In taking our mental inventory, let us see if we have this fault, actual or potential, and if we do, let us decide not to carry it any longer.

Are any of you enslaved by an over-dependence on people and their opinions? I use the word enslaved advisedly, for we are not free if we cannot think and act according to our own best judgment. Adult in years though we may be, we may never have emancipated ourselves, as we normally should, from our parents or possibly

from their points of view. If we have not, we have failed to reach mature development. We may be conscious of a great deal of conflict in our own minds because our parents' ideas and ours are at variance. Or it may be that, even as we did when children, we continue to accept without thought or question courses of action minutely outlined for us.

Another impediment to normal mental growth is to be tremendously dependent upon what people think or say of us. We may be so possessed by the thought of the impression we are making, or by what people are going to say, that we are pitifully restricted in our activities. Frequently this oversolicitude regarding people's opinions rests on a lack of confidence in ourselves. In childhood we may have been subjected to much criticism. Perhaps comparisons were made between ourselves and our prettier sisters, or cleverer brothers, or more graceful playmates. As a result of these experiences, especially if we had no conspicuous personal assets or successes, we may have developed a feeling of inferiority or inadequacy that we have never gotten rid of. And so, as a result of an inferiority complex, of which we hear a good deal these days, we distrust our judgment and are kept from attempting what we might do efficiently, because of a fear of failure. Is it not better to fail sometimes than to be so tethered by the short rope of fear?

Do not misunderstand me about this matter of effort and achievement. It is foolish, of course, to keep on over-reaching our abilities. That is a waste of energy and leads to tension and dissatisfaction. The thing to strive for, aided and abetted by our judgment, is to strike a happy medium between doing less than we might, because of imaginary limitations created by self-distrust, and attempting more than we should, because our ambition exceeds our limitations. Just as misery is said to love company, so we often find comfort in realizing that every one of us has her own peculiar limitations. Instead of being weighed down by them, let us face them squarely. There is always something to do. We can start out to overcome

our shortcomings, turn them to our advantage, or strengthen other qualities that will offset those we lack.

There are many people in this world who avoid responsibility at every turn. The reasons for so doing are legion. Some airily slide out from under, like a certain mother that I heard of recently who remarked to a friend, "I don't see what those teachers are thinking about to let my daughter come to school dressed the way she is." Others, and they are generally conscientious, dread responsibility because of the feeling of inadequacy just mentioned. While it is not the only factor, the tendency to belittle ourselves does affect materially our willingness to assume responsibility. More than that, it makes much heavier the burden of responsibility that life sooner or later imposes on most of us. Is it not, then, an important part of our self-training, that we take advantage of opportunities for assuming responsibility instead of shunning it whenever possible?

In the discussion of positive mental health the question of fear should receive attention, but fear is such a big subject, it is hard to say much about it in a word or two. In certain nervous illnesses persons may be obsessed by fear of high places, of crowds, of open spaces, of disease; superstition imposes many fears on its victims; fear of death, based on terrorizing experiences or on morbid imaginings, makes many a child miserable and may carry over into adult life. The more serious fears that really affect the normal activities of an individual need treatment at the hands of a physician who is experienced in nervous disorders. The simpler ones, if faced and analyzed, or traced back to their beginnings, often cease to trouble, especially if we allow our sense of humor full reign.

There is a certain form of mental activity that may take a lot of time, get nowhere, and be unsettling. I refer to daydreaming. Children are not the only ones who build castles in the air. Most of us do some of it. If our daydreams inspire us to action, they may be of great value; but many of us let the thought of what we are going to be or do keep us so satisfied

that we are not impelled to do anything right now. It is also easy for some people to attempt to escape from what may be hard reality, by means of daydreams, in which conditions are more to their liking. After all, we have to live in a real world, and our job is to adapt to reality as well as we can. Daydreaming is apt to interfere with our powers of adaptation. Another serious objection is that it may lead to discontent, because of the contrast between what our imaginings conjure up for us and what may be our real lot.

I should like to leave with you the thought that behavior is always purposive. In other words, there is always a reason for it. A realization of this truth should make us more patient with children, more anxious to try to understand why they do things, instead of blaming them for being, as we size them up, naughty, or cruel, or stubborn. Often we say of ourselves in all sincerity, "I haven't any idea why I did that thing, or made that remark." Sometimes a little honest thinking will illuminate very clearly the causes underlying our behavior, causes that we might prefer to pass over as obscure if we did not want to understand ourselves as well as possible.

In addition to the desire to be popular, I assume that we all really want, not only freedom from physical or mental illness, but positive health of mind and body, and that we want these things enough to work for them. This desire, if it amounts to anything, cannot be a passive one. We have to work, we have to exercise, if we are to have strong fit bodies, alert clear minds, and the good will of those with whom we come in contact.—*Mental Hygiene Bulletin*.

ANOTHER REASON TO REDUCE

Passenger: "Please conductor, will you help me to get off the train?"

Conductor: "Certainly, Madam."

Passenger: "You see, it's this way. Being rather stout, I have to get out backwards—the porters think I'm getting in—so they give me a shove and say, 'Urrp up, ma'am.' I'm five stations past where I want to go now."

ALL MUST GUARD PUBLIC HEALTH

The average citizen pays for accidents and disease in deaths, injuries, illnesses, bills, discounted investments and depreciated values. Therefore it is his job to prevent accidents and disease, says Dr. J. Howard Beard.

In the old days of the one horse shay, the physician was responsible for the health of the entire community. Medical science has advanced tremendously since then. So has industrial science. Although many disease conditions have been brought under control, countless new ones have arisen as the result of the rise of industrialism.

Fast trains and aeroplanes are as much at the disposal of disease germs as of human beings. While large cities foster clinics and medical schools and hospitals, they also foster unhygienic living conditions, accidents and illness.

The physician can no longer handle the situation alone, in spite of his greatly increased knowledge. He must have the cooperation of every citizen in the community. It is the average citizen who can and should insist on the adoption of public health measures, on the health education of school children and adults, and on the furtherance of preventive medicine.—*Hygeia*.

PROPER CONDITIONS FOR OCEAN BATHING

Ocean bathing, the most popular of all special baths, is rarely used as a health measure under the direction of a physician, says Dr. Guy Hinsdale, climatologist. The conditions of ocean bathing are most inconstant, the temperature, particularly, varying from day to day as the winds vary.

Activity in the water is especially desirable to promote good circulation. Those who do not swim should not bathe in quiet, protected bays. Surf bathing is good for them, and a ball will add to the fun and activity.

Persons of advanced age, or weakened from sickness, or who, for any reason, have poor skin circulation should not indulge in ocean bathing. Persons with heart trouble should not bathe in the ocean except under the direction of a physician, and with a friend or guard near.

Complete immersion is desirable, as it equalizes the circulation and hastens the reaction. One should not bathe in the ocean when very tired or sooner than two hours after a meal. The duration of an ocean bath varies with the temperature of the water and the age and physical condition of the bather.—*Hygeia*.

EXPLODES MANY FOOD FALLACIES

Because tomatoes have the red color of blood and their juice is thinner than blood, it does not mean that they will thin the blood. There is no truth in this popular superstition.

Acid fruits cannot make the stomach acid, for the digestive juices in the stomach are already acid. Milk is curdled as soon as it reaches the stomach in the normal process of digestion. There is no reason why milk and berries or other fruit cannot be eaten together.

In some localities white eggs are considered better than brown. The color of the shell is due to pigmentation, like the color of a person's skin, and there is no other difference in the two kinds of eggs. Soaking cucumbers with salt water may make them more palatable, but it has no effect on the digestibility of the food.

Spinach, carrots, lean meat and egg yolk contain just as much iron as many more highly advertised foods. If a person eats all kinds of foods, he will be supplying his body with all the iron it needs. Another false idea is that fish is brain food. Fish is the same sort of food as meat, and the brain is nourished from the same source, the blood stream, as are the muscles or other parts of the body.—*Hygeia*.



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Diphtheria Can be Eradicated by Vaccination



Protect the Children

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly THE HEALTH BULLETIN, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
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Don't Spit Placards	Public Health Laws	Water Supplies
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FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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CHANGES IN BOARD PERSONNEL

On June 15 Dr. Charles O'H. Laughinghouse of Greenville resigned as a member of the State Board of Health. He was elected a member by the Medical Society of the State of North Carolina at its annual meeting in 1911 and had served continuously for fifteen years, being on the executive committee for the past several years. To fill his term of office expiring in 1929 the Board elected Dr. W. S. Rankin of Charlotte, former Secretary of the Board for a period of sixteen years.

On August 6 Dr. Richard Henry Lewis of Raleigh died, aged 76 years. Dr. Lewis had served as a member of the Board since 1885, and from 1892 to 1909 he served as secretary of the Board. Since 1909 he had been a member of the executive committee. Dr. Lewis held his membership by appointment from the Governor, having originally been appointed by Governor Scales and re-appointed by succeeding Governors. To fill the term of Dr. Lewis expiring in 1931 Governor McLean has appointed Dr. John B. Wright of Raleigh. Concerning the appointment the Governor issued the following statement:

"In the appointment of Dr. John B. Wright of Raleigh to fill the important position on the State Board of Health caused by the death of the late Dr. R. H. Lewis it became necessary for me to select one from a number of distinguished physicians of the State, all of whom are of out-

standing ability and fitness. I was influenced to appoint Dr. Wright, because I think it important that there should be at least one of the members of the board a resident of Raleigh. This has been the rule since the Board of Health was established. I also felt that in this day of the growing importance of diseases of the ear, nose and throat, that there should be one specialist in those diseases on the board, in order that he might bring to the service of the board special training in that field as Dr. Lewis undoubtedly did.

"Dr. Wright has been closely associated with Dr. Lewis for a long number of years and is thoroughly acquainted with the scope and character of the work of the State Board of Health. He has been especially active in promoting school clinics—one of the most important phases of the work now being done by the board. In this, as in other matters, both in his professional and private capacity, Dr. Wright has evinced a fine spirit of public service which is of prime importance in the public position to which I have appointed him."

At a called meeting of the Board held in Raleigh on June 21 Dr. Charles O'H. Laughinghouse of Greenville was elected Secretary, effective October 1, 1926. He succeeds Dr. W. S. Rankin, whose resignation was effective June 1, 1925. In the interim Dr. G. M. Cooper has been acting secretary.

RICHARD HENRY LEWIS

By W. S. RANKIN, M.D.

It seems fitting to begin this sketch with an accurate mental picture of the full-grown man himself, as drawn by his friend, the Right Reverend Joseph Blount Cheshire, D.D.:

"Doctor Lewis is a man of strong natural understanding, of clear and penetrating intellect, of just and accurate discrimination, and of a capacious mind well stored with the fruits of study and observation. Diligence and perseverance in youth improved the opportunities afforded by the best institutions at home and abroad. An unusual native endowment of courage, patience, frankness, generosity, and unclouded sincerity, have been developed and strengthened into permanent qualities of matured character, under the best influence of early Christian nurture, and by the discipline of years of vigorous exercise in close contact with the realities of domestic, social and public life.

"Eminent in his profession he is equally eminent for the best and most attractive qualities in social life, and for a practical public spirit and benevolence, which have for years made him a strong personal influence in support of every movement for the best interests of his city, county and State. Dear to his friends, a welcome guest in all companies, he is of that genial, kindly, responsive, and wholly unaffected nature, which commands instantaneous recognition even from strangers, singularly clear and perspicuous in thought and in expression, intelligence and knowledge, illuminated by an adequate and not excessive sense of humor, render his conversation as instructive as it is entertaining; and the same genuine qualities give him an unusual effectiveness as a speaker, especially in his own line of popular Scientific Exposition.

"That which is characteristic of the man may perhaps be expressed most adequately by the word, *Balance. Equipoise*. The best qualities of heart and mind are so admirably combined, and have been so fairly

and evenly developed in the varied disciplines of a broad and sympathetic life-experience, that they have produced the simple, unaffected, unconscious excellence of normal Christian Manhood."

Now, having seen Doctor Lewis as Bishop Cheshire has drawn him, we may turn to those factors of heredity and environment which have expressed themselves in such a rare and attractive personality.

Doctor Lewis was born near Falkland, Pitt County, North Carolina, February 18, 1850. His great-grandfather on the paternal side of his family was Colonel Exum Lewis, who came to North Carolina from South-eastern Virginia about the middle of the Eighteenth Century. Colonel Lewis settled in Edgecombe County and was colonel of the militia of that county during the war of the Revolution. Exum Lewis, the Second, the grandfather of Doctor Lewis, was a planter and merchant who resided in Edgecombe County. The father of Doctor Lewis, Richard Henry Lewis, died when the son was but seven years of age. On the maternal side of his family Doctor Lewis is descended from George Durant, who removed from Virginia about 1658 to what is now Durant's Neck, Perquimans County, on the Albemarle Sound. One of his maternal great-grandfathers was Joshua Skinner, of Perquimans County, whose wife was Martha Ann Blount. The other maternal great-grandfather was Richard Hoskins, an influential man during the Revolutionary War, a fearless and zealous patriot. He was the first signer of the famous "Resolutions of the Vestry of St. Paul's" at Edenton, and he answered his country's call to arms and conducted himself with signal bravery and courage during the War for Independence. His wife, Winifred Wiggins Hoskins, was secretary of the Edenton Tea Party, when the ladies declared that they, because of the trouble with Great Britain, would no longer use any tea, and adopted other patriotic resolves. From them

was descended Martha Elizabeth Hoskins, who married Richard Henry Lewis and was the mother of the subject of this sketch.

Doctor Lewis attended the universities of North Carolina and Virginia, and graduated with the degree of Doctor of Medicine from the University of Maryland in 1871. Though well educated, both in the liberal arts and in the Science of Medicine, these acquired qualifications do not explain his subsequent career. Those graces, the gifts of long time and heredity, which determine what use is to be made of acquired qualities, were also his in unusual degree. He began life with complete equipment for a large rôle in his profession, with a genuine appreciation of the high ideals of medicine and a clear understanding of its science.

After practicing a short time Doctor Lewis made a special study of the diseases of the eye and ear, and in 1875 began the practice of his specialty in Savannah, Georgia. Shortly after he had located in Savannah he was elected to the professorship of diseases of the eye and ear in the Savannah Medical College. After two years, in 1877, he left Savannah and returned to his native State, where he located in Raleigh and later, in 1887, after having practiced for ten years, he induced his brother-in-law, Dr. Kemp P. Battle, Jr., to resign from the Marine Hospital Service and become associated with him in the practice of his specialty.

It is as significant of the outstanding worth of the man as it is complimentary to the good judgment and quick perception of the State medical profession, that within three years of the beginning of his work in Raleigh, Doctor Lewis was elected to membership on the State Board of Medical Examiners, one of the most coveted honors and important positions within the gift of the profession. This early judgment the medical profession confirmed and still more emphatically expressed in 1891 in his election as President of the Medical Society of the State of North Carolina.

For many years he served in the important position of Chairman of the Committee on Legislation and was always alert and effective in safeguarding the interests of the profession in matters of legislation. In nearly every Legislature, legislation which would have been hurtful to the standards of medical practice was proposed, but practically always defeated by the tactful and reasonable presentation of the point of view of the Society through its representative, Doctor Lewis. So successful was he in elevating the standards of medical practice in North Carolina that in 1888 this State was regarded as a model in laws regulating the practice of medicine. In his individual and official capacity he rendered his profession a larger and more far-reaching service than any other member, past or present. The fact is that this sweeping statement has been written into the records of the Medical Society of the State of North Carolina in a resolution unanimously adopted on the retirement of Doctor Lewis as Secretary of the North Carolina State Board of Health. Among other things, the resolution says: "That this Society expresses its conviction that he has done more, both in his official and individual capacity, than would have been possible for any other one to have done."

With resources of mind and heart sufficient to honor every draft that his profession drew on him, he has always carried a large surplus of interest and energy for the service of his State. Entering the profession in 1871, a date which, better than any other, possibly, may be regarded as marking the birth of preventive medicine, the young doctor and the new idea of medicine grew up together—congenial spirit and opportunity. Still another interesting coincidence in the relation of Doctor Lewis to public health work is the fact that the North Carolina State Board of Health was organized in the same year, 1877, that he moved from Savannah to Raleigh. Eight years after the organization of the Board Doctor Lewis was elected as

a member, that is, in 1885. Seven years later, in 1892, following the death of Dr. Thomas Fanning Wood, the founder of public health work in North Carolina and the first Secretary of the State Board of Health, he succeeded Doctor Wood as the executive officer. Here, again, can be seen the unseen hand relating man and circumstance, for it was not until the nineties that the discoveries and knowledge upon which disease prevention rests began to filter out from the scientific and professional world into public thought in general.

As Secretary of the Board, Doctor Lewis at once recognized that public interest and support in the conservation of health would rest entirely upon the popular understanding of public health policies and laws. He realized that democracy leads and does not drive and so, with education as his password, he enlarged the mailing list of the State Board of Health Bulletin; he did away with the subscription price and made it a free publication; he persuaded the Legislature to remove printing restrictions; he himself wrote many articles of a popular character for publication in the Bulletin, and in the newspapers, and secured additional articles from capable friends; he planned and supervised the holding of a number of public conferences for the consideration of the subject of disease prevention. This wise recognition of popular understanding and appreciation as the sure foundation of public health work is the primary and basic explanation of the uninterrupted expansion of the public health movement in North Carolina.

As early as 1896, at a time when laboratory courses were just beginning to be considered in the medical schools, Doctor Lewis succeeded in arranging for the laboratory examination of diagnostic specimens and samples of public water supplies. With this initial laboratory work, made possible through the aid of his friends, he gradually brought about legislative appreciation of the need of a public laboratory until, through a small tax imposed upon public

water companies for the examination of samples of water, and through a small appropriation—\$1200—he was able to establish the State Laboratory of Hygiene as an important division of the State health work in 1905. In 1907, with a larger appropriation, he completed the foundations and plans for a laboratory that has since developed to be one of the five largest and most efficient public health laboratories in the United States.

Along with the supervision of public water supplies through laboratory analyses, Doctor Lewis recognized the necessity of engineering supervision and so, in 1896, succeeded in securing the services of a sanitary engineer for the inspection and regulation of public water companies. Here, again, in this field, we see the patient, steady, constructive development of an idea which, by 1909, had developed to a point where North Carolina stood with only two other states of the Union in the protection of its public water supplies.

In 1906 Doctor Lewis was one of the leaders in effecting the organization of the North Carolina Association for the Study and Prevention of Tuberculosis, out of which organization there probably emanated the idea which Dr. J. E. Brooks successfully piloted through the legislature in 1907 for the establishment of a sanatorium for the treatment of tuberculosis.

In 1909 Doctor Lewis succeeded in persuading the Legislature to pass what the Bureau of the Census of the United States Government was pleased to consider the "first practical vital statistics law enacted in the South." This law, in its beginning restricted to the towns and cities of the State which had a population of 1,000 or more, was extended, through its demonstrated advantages, by the General Assembly of 1913 to embrace the whole State, so that North Carolina, with only one other Southern State, was admitted in 1915 to the Registration Area.

In 1909 Doctor Lewis succeeded in securing the passage of legislation which provided for counties

furnishing free diphtheria antitoxin and for making possible the purchase of antitoxin by the citizens of the State at greatly reduced cost.

Under his leadership North Carolina was the first Southern State to undertake active measures for the control of hookworm disease, and was among the first of the Southern States to recognize pellagra as a large public health problem, and to create a special commission for the study of that disease.

As a fitting climax to his participation in legislation designed for the conservation of the health of the State, he succeeded in securing the passage of a law in 1909 which provided for a full time State Health Officer, thereby legislating himself out of office, and so closed his career as Secretary of the State Board of Health with his own official sacrifice. At this time the North Carolina State Board of Health, both in resources and in its legal provisions, was easily the leading Board of Health in the South.

In the seventeen years during which Doctor Lewis was at the helm of the public health work in this State he exercised such infinite patience, good judgment and rare tact as to serve a great and difficult example for all of his successors in office, and he so laid the foundations for public health work in North Carolina as to make what has followed in the years since he resigned, 1909, the natural sequence of his work.

The University of North Carolina gave expression to its appreciation of the work of its honored alumnus by conferring the degree of Doctor of Laws on Doctor Lewis on May 8, 1912. Dean Raper of the graduate school, in presenting Doctor Lewis for the degree, voiced the sentiment of the people of the State in the following words, "I have the honor to present for the degree of Doctor of Laws, Richard Henry Lewis, Secretary of the North Carolina State Board of Health, 1892-1909; President of the National Conference of State and Provincial Boards of Health of North America in 1906; President of the American Public

Health Association in 1908; distinguished for a rare charm of personality, for excellence as a physician and teacher of medicine and above all for a long and valued service in the promotion of public health."

His work in North Carolina was of such conspicuous quality as to have had effective influence far beyond the boundaries of our own State. To all the national authorities of public health work the name of Richard H. Lewis, Secretary of the North Carolina State Board of Health, is familiar. In 1905 he was elected President of the Conference of State and Provincial Boards of Health of North America. In 1907 he was elected President of the American Public Health Association, the largest and most influential public health organization in the world. Only recently, fifteen years after his retirement from active health work, his great service to his State and to his country has been remembered and signified by his election as Honorary Fellow of the American Public Health Association.

Pioneer, constructive statesman, and leader, State and National, in the field of public health, Doctor Lewis has found still additional resources of mind and heart to devote to other matters of vast public concern. In the development of education for both his State and his city he has given generously of himself. For thirty-two years he has served as trustee and member of the executive committee of the University of North Carolina. Few men, not actively and professionally engaged in educational work, have given the State fuller and finer service in the cause of education. For thirty-three years he served as a member of the school committee of Raleigh Township and his service to local education has been memorialized recently in the dedication of one of the large schools of the city to his memory. For twenty years he has been a most helpful trustee and member of the executive committee of St. Mary's School, Raleigh, the Episcopal Diocesan School for Girls for the two Carolinas. For thirty years he has been a member of the board of trus-

tees and the executive committee for St. Augustine's Normal School of the Episcopal Church for the colored youth of both sexes. For twenty-eight years he was professor of diseases of the eye and ear in the Leonard Medical School, and for seven years professor of that branch of medicine in the Medical Department of the University of North Carolina, located at Raleigh.

Doctor Lewis' progressive, public-spirited interest, already sufficiently attested, found still further avenues of expression than those of public health and education. He introduced the first cream separator in North Carolina. In 1884, while chairman of the street committee of the Raleigh Board of Aldermen, he was responsible, so far as is known, for the use of the first road machine used in the State, and as chairman of the road committee of the Raleigh Chamber of Commerce he drafted some of the first legislation for the improvement of rural roads.

He has always taken a deep interest and an active part in the sup-

port of his Church, having served as Senior Warden of Christ Church (Episcopal) since 1888. His religious life has been characterized by a rare blending of humility of spirit with an exalted faith.

From what has been said it is quite natural that the business world should have recognized and utilized so large and so well balanced a judgment. His relation to the business development of his city has been through his membership on the Board of Directors of the Citizens National Bank of Raleigh, of which institution he has served as second vice-president since 1916.

He was three times married (1) February 13, 1877, to Cornelia Viola Battle, by whom he had four children: Richard Henry, Martha Battle, Kemp Plummer and Ivey Foreman Lewis; she died in 1886 and he was married (2) April 16, 1890, to Mary Long Gordon who died in 1895 leaving one daughter, Cornelia Battle Lewis; and (3) October 1897, to Mrs. Annie Blackwell Foreman.

IS YOUR CHILD PROTECTED?

Although during the past few years the number of deaths caused by Diphtheria has decreased to one-fifth the former number, there are still many more lives lost from this cause than should be. Diphtheria can be prevented by vaccination, and the only reason children still die from Diphtheria is because parents fail to take this simple and sensible precaution. Most of the deaths from this disease occur in children under 10 years of age. In fact, most of the deaths are in children under 6 years of age, and death in children over 10 is very rare.

Persons of any age may have, and do have Diphtheria, and older persons are even more prolific disseminators of the disease than young children because of the wider range of their activity. Although persons over 10 years of age seldom die from the disease, they may easily suffer some one of the many complications, hence Diphtheria is a serious thing for any person.

A very great many cases of rheumatism or heart disease in the adult and middle aged are a late manifestation of damage done in childhood by the toxins of Diphtheria.

Every susceptible child or adolescent should be vaccinated for Diphtheria. Public opinion decreed some years ago that no child should enter public schools until after that child had been protected by vaccination against Smallpox. Public opinion is now coming to demand also that no susceptible child shall enter public school until after it has been protected by vaccination against Diphtheria. This is as it should be. Every public school teacher in the State should use all of her influence to secure the vaccination of every school child. Furthermore, she should use her persuasive powers to convince the patrons of her school that the pre-school child also be vaccinated. Certainly, if all school children are protected there will be no interruptions in school by reason

of Diphtheria, and none carrying the disease home to the pre-school children. Thus a great good will have been accomplished. The pre-school children will nevertheless be in some danger, and they are the ones who die when they do get sick.

The State is greatly concerned in the eradication of this perfectly needless disease and the State furnishes vaccine, and health officers administer it, free of charge. The State has made it possible for every child in the State to be protected. If the parents or guardians of children will only cooperate to the extent of taking these children to the nearest health officer or doctor for vaccination, every life lost and every person disabled could be saved.

This is the pity of the situation—the loss is so inexcusable. Vaccination is not dangerous nor even expensive. With these facts proven over and over again, and when the people are repeatedly informed, it seems that whoever is responsible for any child who is killed or maimed by Diphtheria is certainly responsible for that death.

Not all children after they reach the school age are susceptible to Diphtheria, and hence there is some excuse for testing children of school age, in order to vaccinate only those who are susceptible. Children under 6 years of age are so nearly all susceptible that for them this testing is scarcely justified. Pre-school children should all be vaccinated, and this vaccination should be done as soon as possible after the baby is 6 months old.

The test used to find out which children of school age are susceptible, and which are not, is called the Schick test. It consists of injecting into (not underneath) the skin of one arm, one drop of a perfectly harmless fluid. This testing fluid is also furnished free by the State. If the child or person is susceptible to Diphtheria there will be, in a few days, a peculiar appearing spot around the point of the injection which the doctor will recognize when he inspects it. If the person is not susceptible no spot will appear, or at least a spot quite different from

the other and which the doctor can recognize.

If the child is susceptible then that child should be protected by vaccination. The material used for vaccination is different from the material used for testing, and is called toxin-antitoxin. It is called by this name because it is a mixture of the diphtheria poison—toxin, and the antipoison—antitoxin.

When this toxin-antitoxin is injected underneath the skin it causes nature to immediately begin producing in the system a natural antitoxin. This natural antitoxin is produced very slowly and one injection is very seldom sufficient to cause nature to produce enough antitoxin to thoroughly protect the child. It usually takes three of these injections, which are given at intervals of one week. After this, nature continues making in the system this antitoxin for at least 6 months. That is, it takes 6 months after vaccination for the full effect of the vaccination to be produced. Experience has proven that three injections are sufficient to fully protect 85 per cent of those vaccinated. Hence, after 6 months the child should have the Schick test. If it is one of the 85 per cent which is fully protected, then that child is safe the rest of its life. If it happens to be one of the few where three injections were not enough, then that child should have three more injections to complete the immunization.

The whole process is very simple, painless and inexpensive, and it is absolutely safe.

Are you guilty of allowing any child in your school or in your home to take unnecessary risk?

Protect the children!

Village Officer: "Everything I say, goes."

Nurse: "Come to my garage every cold morning and say 'Ford.'"

Patient: "Does your wife drive the car?"

Dr. Bartlett: "Yes, but I steer it."

SCARLET FEVER ANTITOXIN AVAILABLE AT STATE LABORATORY

Antitoxin for the treatment of Scarlet Fever has proven to be in most cases very helpful.

Perhaps the results are not quite so spectacular as the results of antitoxin in the treatment of Diphtheria, but scarlet fever antitoxin does in most cases cut short the disease and quite certainly decreases the probability of the complications and the injuries which follow and cause such dread of the disease.

The State Laboratory of Hygiene now has on hand a supply of scarlet fever antitoxin (Dick) which will be distributed to doctors and health officers at actual cost. The supply will be kept constantly in stock and since all orders can be filled on the day of receipt, provided they arrive before 5 p. m., it will not be necessary to lay in a large supply.

The price is \$4.50 for each therapeutic dose and \$2.25 for each prophylactic dose.

It is definitely proven that both the curative and protective effect of

scarlet fever antitoxin is very marked and immediate, but it is also evident that the immunity produced by the prophylactic dose is of short duration. Therefore widespread attempts to immunize large numbers is not advisable. In this respect there is a very great difference between this and diphtheria toxin-antitoxin. By vaccination for diphtheria, immunity is produced for life but vaccination for scarlet fever only protects temporarily in the face of an immediate danger.

The toxin for making the Dick test (comparable to the Schick test for diphtheria, to determine those who are susceptible) is not kept in stock at the State Laboratory of Hygiene, but will be ordered when requested with very slight delay.

The scarlet fever antitoxin distributed by the State Laboratory is not made at the laboratory but is bought from an authorized commercial laboratory.

GUARDING THE PURITY OF NORTH CAROLINA OYSTERS

On August 1st the "Pamlico," the Laboratory boat operated jointly by the State Board of Health and the State Fisheries Commission, began a thorough inspection and testing of all oyster beds in North Carolina waters from which oysters are to be taken for market.

This is in order that the markets may be assured that North Carolina shell fish are safe for human consumption.

After an inspection and testing of the beds the laboratory boat with its skilled laboratory personnel is kept busy with continuous inspection of shucking houses and packing plants.

During the preliminary inspection of oyster beds a representative of the United States Public Health Service accompanies the laboratory boat for the purpose of coordinating the methods of inspection with other parts of the country. In this way the Public Health Service can en-

dorse a North Carolina inspection ticket, which becomes a standard assurance of purity wherever North Carolina oysters may be sold. Consumers who buy North Carolina oysters may be assured that these oysters left the shucking and packing house clean and safe.

HOW WE MAY POSTPONE DAY OF OUR OWN FUNERALS

If we wish to postpone our funerals and live to the age of 125 years as we should, we must persistently practice the principles of health, says Thurman B. Rice.

It is not enough to live a long life; it must be a full one as well. Women are young at 38 today, yet two generations ago they were elderly ladies, rocking on the porch and watching the procession go by. To be actively alive, efficient, happy, interested and interesting, one must have health.

BEAUTY AND POPULARITY

In all the realm of nature there were never two objects exactly alike. Each blade of grass, each tree and each human being has some peculiarity all its own. Nature abhors monotony and hence makes no two alike. She makes them so nearly alike there is a family resemblance but always there is a difference. When individuality becomes extreme it then becomes a freak, and while nature abhors "sameness" she also abhors freakishness. Physical beauty is a blending of colors and shapes typifying our ideal average for that family of objects or individuals. The beautiful girl is one who is neither fat nor skinny, whose nose is neither long nor flat, whose mouth is neither large nor small, who has, in fact, no freakish feature or expression.

The ugly man, woman or child is the one who WE think has a nose too big, a mouth too little, eyes the wrong color and hair that does not match. But after all who are we to decide this matter? Dare we say the maid from Timbuctoo is less handsome or less perfect than the maid who won our bathing beauty contest? The standard is the ideal average for that family of objects or individuals. So, too, in the realm of character or disposition we love most the one who is most balanced. The person who shows some outstanding trait or mannerism is odd. The odd person does not mix well in the association with others.

All outstanding individual traits or characteristics are the result of

environment or habit. There was at first an individual characteristic which environmental conditions developed or permitted to grow until it became a freakish characteristic. A good illustration of this is the criminal who disregards the rights of others—who robs and commits murder, because as a child the trait of selfishness, common to all persons, was allowed to develop to an extreme, because as an only child doting parents gave in to every whim and wish. So firmly fixed has become the habit of thinking first of self that in later life selfishness overpowers all other considerations.

The little girl who pouts and bites her nails will, if untaught, go on biting her nails and develop other unpleasant mannerisms which will make of her "persona non grata" among her fellows and interfere with her usefulness in life.

During the plastic period of childhood and adolescence these "lopsided" freakish traits should be pruned off while yet they are only buds. At this age the operation of pruning produces little pain and no damage. The ideal to keep in mind is maturity which embodies to the greatest possible degree the ideal average.

A tang of individuality, like a grain of salt is charming. Individuality permitted to develop into extreme freakishness is also like salt in excess which causes a dead sea of briny uselessness and isolation.

TULAREMIA

Perhaps there is "nothing new under the sun" but there is appearing in North Carolina a disease which has only recently been recognized. It has not yet become very prevalent here but is becoming quite rapidly prevalent and extensively distributed throughout the United States. Conditions in this state are favorable to its spread and for this reason information concerning it should be made as universal as possible if ade-

quate preventive measures are to be taken.

The name given to this disease is Tularemia (tul-ar-émia). It is primarily a disease of wild rabbits and is caused by a bacterium (the bacterium Tularene). It is transmitted to man by direct inoculation of the bacteria; that is, by infected tissue, blood or serum of the infected rabbit coming in contact with a broken place in the skin

of human beings. It may also be transmitted from one person to another in the same way, that by handling a person sick with the disease and getting the infection into broken places in the skin.

The disease may also be transmitted by the bite of a certain species of fly and by a tick which has previously bitten a sick rabbit. This mode of transmission does not however at present concern us in this state for it has not been proven that there are in this section any species of fly or insect capable of harboring this infecting bacteria. The disease is however so new that it is entirely possible there may be here such flies, ticks or insects that have not yet been proven to be carriers. The germ causing this disease was first discovered in 1912 when it was the cause of a very fatal epidemic among the ground squirrels in Tulare County, California. *Bacterium tularensis* signifying the tulare bacteria. Tularemia signifying infection by the tularensis bacteria.

Later laboratory blood tests on a person who was sick in Arizona in 1907 proved that sickness to have been tularemia. This was the first known case of this disease in the world. At present tularemia has been officially reported from twenty-five states.

The first known case in North Carolina was reported by Dr. L. C. Gage, in a paper read before the Mecklenburg County Medical Society, March 19, 1923. The history and progress of this case is quite typical of all cases and hence we shall quote the entire report as published in the May, 1923, issue of Southern Medicine and Surgery.

"Mrs. W., a resident of Charlotte, on December 27, 1921, was engaged in cleaning some birds (quail) when she stuck a fragment of broken wing bone into the palmar surface of the middle finger of the left hand. Immediately thereafter she manipulated a bowl of dressed rabbits.

"The same night her hand and arm began to pain severely. She had chills and a rise of temperature and the next day kept her bed, being greatly prostrated.

"The slight wound that she had

inflicted was very painful and tender. In a short time a chain of glands became palpably enlarged from the wrist to the axilla. A slough formed in the wound, after which there was a very slight discharge. Glands at the elbow softened and suppurated. She had fever about four weeks and was in bed about six weeks.

"I saw the patient first on March 3, 1922 with Dr. J. H. Caldwell, about nine weeks after the onset of the illness, when she gave me the preceding history.

"At this time the patient was up and about but tenderly nursing the left arm. The site of the initial lesion was healed and represented by a red scar. There was a chain of closely packed glands, about the size of peas, extending from the wrist to the elbow along the radial border of the forearm and from the elbow to the axilla along the outer border of the biceps muscle. On the forearm, just below the flexure of the elbow, there were two suppurating glands, one of which had broken down. It was exquisitely tender. The broken down, necrotic center was surrounded by a dusky violaceous border and exuding a greasy yellowish pus. This lesion did not resemble any pyogenic infection that I had ever seen. The only disease that I could think of which might give the symptoms was glanders. I, therefore, obtained some of the pus in a capillary pipette and carried it to the laboratory for examination."

Then follows a technical description of the examination and findings.

It happened that just at this time there appeared in the April 8, 1922 issue of the Journal of the American Medical Association an article by Edward Francis, M.D., Surgeon, United States Public Health Service, on Tularemia, which made Dr. Gage and his associates suspect that this was the disease troubling their patient. Accordingly, serum from this patient was secured and sent to Dr. Francis for examination at the hygienic laboratory. The proof was conclusive. Here was a proven case of tularemia in North Carolina.

By March, 1923, fifteen months after the infection this patient had entirely recovered except that she still had some pain in the affected arm and some enlargement of the

glands between the elbow and axilla. The first case reported from Virginia was also that of a woman in South Richmond. This lady had stuck a needle in her finger and while it was still sore she dressed a rabbit one morning which a cat had brought in. Eight days later she had a chill and a temperature of 104 degrees with nausea and vomiting. For the following 5 days the case somewhat resembled typhoid fever. A specimen of blood was sent to the hygienic laboratory at Washington and proved to be tularemia.

A man went hunting and during the day scratched his hands quite badly. At the end of the day he dressed five rabbits. Three days later he had a hard chill and his physician found him with a temperature of 103, severe pains in head, back and abdomen. On one thumb there was signs of severe infection and pus under a scab. For the next 10 days his fever was very irregular and he was greatly prostrated. There was enlargement of the glands of the arm and two punched out ulcers on the infected thumb. After the fever subsided he still complained of feeling very tired on the slightest exertion. His blood also was sent to the laboratory and it was proven that he had tularemia.

Cases have been reported from twenty-five states and for every month in the year. In the west where the disease is also transmitted by the bite of flies and ticks the greatest number of cases have occurred during the summer months. In this State it is probable that the greatest danger may be in handling

infected rabbits. Now that the rabbit season is coming on it is timely warning to be especially careful in dressing rabbits or handling rabbits. Several cases have been reported among market men from handling infected rabbits. Several cases have occurred among those who dressed the wounds of those sick from the disease and also among laboratory workers from handling specimens sent in for examination. Persons who nurse cases of tularemia should always wear rubber gloves. No ill effects have ever been noted from eating rabbits, probably because cooking easily kills the bacteria and destroys any toxic products they may eliminate. Obviously however it would be very unwise to eat any rabbit, however well cooked, if there was any appearance in the carcass of a suspicious sore or enlarged glands.

These cases are very rarely fatal but death from this cause has occurred. Convalescence is slow, the average of complete disability being at least two months and two additional months of partial disability.

Tularemia is known to exist among the rabbits of this State. Just how extensive the infection may be is not known. Since it is only beginning to affect human beings it is also impossible to prophesy what the future may develop. No preventive vaccine or curative serum has been perfected. The treatment is directed toward the relief of symptoms. Complete rest in bed is the most valuable measure.

STAMMERING

It seems probable that there is a lack of appreciation of the importance of speech as a factor in the mental growth of a race. Speech has been defined as "a system of articulate words adopted by convention to represent outwardly the internal process of thinking"; but not only does it represent the process of thinking, but it is so closely interwoven with it as to be essential to

its highest development. Speech is also one of the essentials to the highest physical development, for its use tends to expand the chest and aerate the blood. The faculty of speech is presided over by a certain area in the brain which incites to action and the harmonious working of the various muscles and organs which produce speech and which also have other important functions beside the making of articulate sounds.

Defective speech, therefore, having its origin in a defective action of either the brain or nervous centers and these various organs or muscles, is a serious malady and deserves the most careful consideration.

One of the most common speech defects is that of stammering. This is a real handicap and usually it is a preventable condition. Prevention lies in a thorough understanding, on the part of parents, of the many and varied causes which lead up to stammering, and in the proper management of the child at and during that age when stammering begins. This is almost invariably between the ages of two and six.

Because of the importance of the subject, and because so little is to be found concerning it in popular literature, it is justified to print the following discussion of the subject by Dr. R. J. E. Scott.

"Stammering may be defined as interrupted speech characterized by a spasm of certain opposing muscles more or less closely related to the vocal or oral articulating mechanism. This spasm is not always confined to the muscles directly concerned with speech, but may extend to any part of the body, especially when great effort is made to overcome the interruption. It is never exactly the same in any two cases, nor does it always remain constant either in degree or location, but it changes with the temperament of the individual. The phlegmatic person will sometimes stand and only stare, and use no apparent muscular effort at all until such time as he thinks he may be able to proceed. This has been called the silent form of stammering, and in it there is but little noticeable spasm. In the majority of cases, however, the tendency is at least to try to speak, and the degree and extent of spastic muscular contraction will be proportionate to the strength of the effort put forth.

A muscular spasm, therefore, of greater or less intensity is the one condition that is characteristic of all forms of stammering. The cause of this spasm is manifestly a result of

misapplied energy in the effort to speak, and it has its counterpart in the grimaces of the letter-writer unaccustomed to the occupation, and in the muscular contortions of the beginner on a bicycle. To the expert, the control of a pen or a bicycle becomes automatic, and the nervous energy expended is almost nil; but to the beginner, the control must be voluntary, and the amount of nervous energy expended is immense and is out of all proportion to that which is required. So in the normal person speech tends to become automatic and to require the least possible amount of nervous energy; but when something happens to interfere with the development of this automatic action of the organs of speech, and voluntary action attempts to come to the rescue, the result is always more or less of a failure. There is a surplus of nervous energy expended, and this surplus overflows, so to speak, into muscles that may have but little to do with the process of speech production—and the result is a spastic contraction, or a spasm of these muscles.

The overflow takes place along the channels of least resistance, which channels vary in different individuals; and, therefore, the spasm does not occur in the same muscles in all cases, nor, indeed in any two cases. It may occur in almost any part of the muscular system, and its manifestation is often grotesque in the extreme.

Etiology: The cause of stammering has given rise to much conjecture, and many superficial observers have supposed that they had discovered it, only to be disappointed upon further investigation. The mistake has been made of supposing that there is but one cause for stammering, and that this cause operates alike in all cases. The fact is, there are many causes, as there are many causes for dyspepsia or any other functional disturbance; and the precise cause in any individual can only be determined after a careful and oftentimes prolonged study of the case.

Among the predisposing causes heredity must be placed first. About

35 per cent of the reported cases had relatives who stammered. It is an affliction that belongs to youth, and it begins at, or soon after, the time the child begins to talk. It may continue to old age; but stammerers, as a rule, are not long lived. Statistics show that about 84 per cent of all cases seeking relief are males, and this would seem to indicate that sex must be regarded as a factor in the cause of the affection.

A nervous temperament, either inherited or acquired, is a condition common to most children who stammer. This condition may follow one of the infectious fevers or other diseases of childhood, or it may be the result of eye-strain, hypertrophied tonsils, adenoid vegetations, or intranasal pressure from whatever source. About 15 per cent date the origin of their trouble to a severe nervous shock caused by fright or injury. One child had his head ducked in a tub of cold water and has stammered ever since. Another was threatened with arrest by a policeman for playing "pussy" on the street. He was thrown into a convulsion, and has stammered from that time. A child fell downstairs and received a slight injury, attended by a great nervous shock, and stammering immediately followed.

The various neuroses are more or less prevalent in stammerers and in their ancestors, and therefore they must be regarded as probable predisposing causes. Not only do glandular enlargements in the pharynx and intranasal hypertrophies and spurs act as causal factors in this affection, indirectly and in a reflex manner through the nervous system, but in so far as they interfere directly with the free automatic action of the muscles of vocalization and articulation must they be considered as direct causes. Moreover, we find decided evidences of arrested or imperfect development in the articulating organs of a large percentage of these cases. High and irregular palatal arches are more common than in persons having normal speech; bifid uvula is of frequent occurrence, and we often find abnor-

malities in the various muscles of the tongue. A very large and imperfectly shaped epiglottis may prove to be the cause in some cases. Anything that interferes with the uniform development and harmonious action of the various mechanisms of speech must be placed among the causal factors of this affection.

Treatment: Few children would be confirmed stammerers if they could have the proper treatment at the very inception of the trouble. Whatever may be the direct or exciting cause in any particular case, the child begins to hesitate in speech during a period of mental excitement. There is a confusion of ideas that leads naturally to a confusion of words and of the elements of which words are composed. It is here that the turning point is made. Usually, the child is scolded or ridiculed, either of which procedures tends to add to the confusion and to make future attempts at oral expression still more difficult.

If the little patient can be tided over this period of nervous excitement, in most cases the development of the affection is prevented. Most careful and gentle treatment should be employed. Any attempt at speech should be interdicted until mental quietude is fully established. A careful examination should now be made, with a view to discovering the cause of the trouble, bearing in mind that any condition that may add to the nervous excitability of the patient becomes a contributory cause. Especially must the nose, the nasopharynx, and the throat be examined for obstructions. Careful examination of the mouth should also be made, and so far as possible any irregularities of structure should be corrected and glandular enlargements reduced; the general health of the patient should be put in the best possible condition.

During all this time the child should be encouraged to talk but little, and to think of only one thing at a time, and to express his thoughts with the greatest deliberation. The word "stammering" should never be used in his hearing, nor should his attention be directed

in the slightest possible degree toward his speech; for the fear of future trouble in speech is easily aroused, and it is one of the greatest obstacles in all cases to the accomplishment of a cure.

The automatic action of the various mechanisms of speech is no longer possible and the patient is equally incapable of voluntary control of these mechanisms. Manifestly, the object to be attained is the reëstablishment of the normal automatic processes of speech, and this can only be done, in a great majority of cases, by making use of voluntary control of the vocalizing and articulating muscles, and thus gradually, but unconsciously, leading the patient back to the normal processes of speech. The first step should be to try to discover the cause, and to remove it if possible. It is well to remember, however, that the original cause may have long since ceased to exist, and that only the results may remain. The stammering, for instance, may be the result of a nervous shock received years ago, or of an adenoid growth long since removed; so that the exciting cause of the trouble may not be apparent at the time of the examination. If, however, we can find any condition that may impair the harmonious action of the nervous system, our attention should be directed toward its improvement.

The general health of the patient, his diet and methods of life, should be carefully investigated and regulated in the minutest detail. The organs of articulation and vocalization should be carefully examined, and an attempt made to correct any abnormality, however slight it may be. A short lingual frenum interfering with the normal action of the tongue is often a great hindrance to freedom of speech, and we frequently find an abnormal development in the various muscles of the tongue; and whether it is the cause or the result of stammering, a slight surgical operation, followed by carefully chosen exercises, will assist very materially toward accomplishing the desired result. Irregularities in the structure of the palate are common

in these cases. There is great lack of uniformity in the size and shape of the palatal half-arches. This is probably due in a great measure to adhesions that form between the folds of the palate and the tonsil, thus causing these folds to be irregularly bound down to the tonsil and interfering with their normal action in speech. The condition is easily corrected by the separation of the adhesions and a slight cauterization of the cut surfaces of the tonsil, to prevent the formation of new adhesions. The vault of the pharynx must be examined, and catarrhal conditions treated on general surgical and therapeutic principles. Nasal stenosis, while it may not be a common cause for stammering, undoubtedly serves as an obstruction to its cure, both by its interference with normal respiration and its reflex influence on the nervous system. Intranasal pressure, therefore, should be removed by surgical procedures, if necessary.

Having corrected the patient's habits of life, both dietary and moral, and having removed, so far as possible, all other sources of nervous excitability and physical and mental depression; and having put the peripheral organs of speech in the most favorable condition for normal action, the after-treatment should consist in the development of a perfect voluntary control of certain important muscles employed in respiration, vocalization, and articulation; and this, as has been suggested, should be used as a means—and in the majority of cases it is the only means—for the reëstablishment of the normal automatic muscular action.

Unfortunately, many stammerers are deficient in will power, and in these cases a voluntary control is difficult to acquire. They not only do not control their speech, but, to use an expression that is common among them, they "stammer in other things" as well. They do not think connectedly nor do they pursue any line of action to its logical conclusion. These are the cases that are difficult to cure, although they are by no means hopeless. The faculty of

the will may be developed by training, just as any other faculty of the mind may be developed; and there are no exercises so efficient for this purpose as those required for the improvement and development of speech.

To gain voluntary control over the organs of speech, certain important muscles that have been considered hitherto as involuntary must be brought under the domination of the will. These muscles belong for the most part to the vocal and respiratory mechanisms. The management of the breath, which is the motor power of the vocal mechanism, is deficient in all cases of stammering, and it is to this point that attention should first be directed.

There is a certain definite and precise action of the great muscles about the lower thoracic and abdominal regions that is necessary to the production and control of voice, and that must be acquired by the patient before any real progress can be made or permanent improvement can take place. Just what the precise action of each one of these muscles is has been the subject of much discussion, and its importance in connection with this work cannot be overestimated. This action is exceedingly complicated, and cannot well be explained within the limits of this article and without a subject for demonstration.

The respiratory muscles must be so used as to bring just sufficient breath upon the vocal cords, and no more than is sufficient, to produce the syllable or word that is required. Not only so, but this little blast of breath must come at exactly the proper instant for the production of the sound. A lack of promptitude at this point is observed in many cases. The voice, of which speech is made, is not present or forthcoming at the instant that the oral mechanism requires it for articulation. The articulating organs try to perform their function, but there is no voice present to be articulated, and the result is a more or less spasmodic hesitancy. The patient dwells upon the initial consonant or repeats

it until such time as the vocal mechanism may come to the rescue with the vocal element that is necessary for the completion of the syllable or word.

In other cases it is the oral mechanism that is at fault, and the patient dwells upon the vocal element or repeats it until such time as the articulating organs may be brought into action for the formation of the syllable or word. Suitable exercises must be given to make the action of these two mechanisms entirely harmonious, and this can be done by teaching the voluntary control of the various muscles of that mechanism in which the action is delayed, and then practicing this voluntary control daily until the necessary promptitude of action is acquired.

In most cases it is necessary, for the exercise of this voluntary control, to have the patient speak in syllables. Alexander Graham Bell has said that syllabification is the cure for all vocal and oratoric defects. Of course, this is claiming too much for the exercise, but it certainly should have a prominent place in the treatment of stammering. In many cases it is necessary even to divide the syllables into their component parts and to drill the patient on these individual elements. Then, after a certain time, the elements that unite to form each syllable should be practiced together and syllabic conversational exercises given, with careful attention to voluntary control over the important respiratory and vocalizing muscles.

In all these exercises there should be an attempt to harmonize the various faculties of the mind, not only with one another but with the exercises themselves. The patient should be induced to think introspectively and to study the impressions that the proper muscular action in the production of each syllable makes upon the mental and physical organisms. Not only should he be conscious through his sense of hearing that the syllable is accurately given, but he should be taught to recognize, by means of the sense of feeling, the

physical impressions made by the normal action of the muscles and the resultant vocalization.

The stammerer generally knows how the syllable would sound if properly given, but he has no definite knowledge of how it would feel to give it or what would be the phys-

ical and mental impressions. In other words, the mental and physical sensations of speech should be studied and developed in what has been called the kinesthetic center of the brain; and after these sensations are recognized and felt, the patient should be taught to reproduce them.

THE REASON FOR PERIODIC PHYSICAL EXAMINATION*

W. U. KENNEDY, M.D., Newcastle, Indiana

It is entirely human to feel that one's self is immune to the troubles that beset others. It is always difficult to fit facts squarely to one's self, particularly if the facts point to disagreeable findings. We are optimistic as to our own welfare, and like Micawber, are sure that something will turn up.

But the critical and searching examination of the younger male population during the war disclosed a percentage of physical incapacity, not illness, but physical impairment, in the class wherein one might reasonably expect the best findings, that appalled those of thoughtful minds. History points with unerring precision that continued life of a nation has invariably been in proportion to the physical standards of the people of that nation as a whole. The whole experience of mankind justifies the ancient maxim that healthy minds are ordinarily found in healthy bodies.

We are prone to indulge in loose boasting that the average age and duration of life has been materially increased, but like most generalizations, it has a kernel of truth and a larger husk of fallacy. The average age is computed by adding the attained ages of all persons and dividing by the whole number. It is quite true that the average age has increased to fifty-eight (58), but the fallacy lies in the fact that intensive study and use of preventative measures have enormously decreased infant mortality. As an actual and

demonstrable fact, there has been an increase in early adult death from such causes as heart diseases, kidney diseases and liver diseases and cancer and apoplexy and arterial disease. The improvements have been in such diseases as typhoid, tuberculosis, intestinal diseases, smallpox, diphtheria, and it is a striking and significant fact that each of these maladies has yielded to preventative measures rather than to actual cures of these conditions when established. We are prone to think that we live in an era of tremendous advance in the treatment of disease, but the cold facts do not bear out such a belief. My personal experience of thirty years makes me say to you that, in the last twenty-five years, I think of no treatment or remedy for any common disease which offers to the victim of the diseases, any great chance of cure. The advances we have made in life saving, tremendous as they have been, are in the domain of surgery and prevention and earlier recognition. Our methods of diagnosis are more exact and refined, they offer recognition of impairments while they are more easily handled, but they are useful only when and if applied. The death rate in T. B. has decreased from two hundred and one (201) to ninety-seven (97) persons per one hundred thousand (100,000) in the last twenty years, but the advanced case is just as likely to die today as fifty years ago. It is the early recognition, early treatment and above all

* Read before the Federation of Women's Clubs, Henry County, Indiana.

prevention, that has decreased the death rate, not increased efficiency of treatment or anything else. Typhoid has dropped from thirty-six to seven and five-tenths, diphtheria from forty-three to sixteen, intestinal disease in children under two, from one hundred and eight to thirty-two, and over two, from thirty-three to ten, but it has all been due to preventative measures. We accept the necessity for sanitation as self-evident now because its value has been proven in limiting certain types of disease, but let an individual have such a disease, the actual death rate is as high as ever. You will note that most of this apparent improvement has been in the domain of children's diseases. We have done much for the child, but what are we doing for the adult?

Economically, one adult is worth many children, for the adult carries on the work of the world. The usual duration of economic usefulness lies between twenty and sixty and the decade between forty and fifty which should be the decade of greatest productive value, actually develops less than half. The impairments which cripple and impair begin developing before thirty and require ten years or so to develop their damage. It is to increase the number of productive useful years that this appeal is made. If we are to lessen the impairments above forty, we must find them in the twenty's and thirty's. For in the forty's we find the crippled hearts, the damaged kidneys, damaged beyond repair, that crowd the doctor's waiting rooms, limited in their capacity for work, limited in their capacity for usefulness and in their opportunity for happiness. And most of these damages were at one time remediable and curable. The economic loss is staggering.

The committee on elimination of waste in industry, of which Secretary Hoover is Chairman, report that the economic loss in this country alone from preventable disease, exceeds three billions every year, enough to pay the National Debt in six years. Five hundred thousand working people die every year, and

of these deaths at least half could be prevented by the same type of measures that have stamped out malaria and yellow fever and smallpox. And those measures are prevention, not cures. It is estimated that twenty-five million people of working age have teeth and mouth infection; that more than a million have some form of T. B., and more than six millions have an organic disease mostly from infections. Think of what it would mean if a saving of but ten per cent could be made! It is a justifiable statement that there is no fixed age for senility, and it is quite within the bounds of scientific possibility to keep the vigor of twenty when forty has been attained and it is quite possible for the man of sixty to be as well and as useful as the average man of forty is today. Everybody recognizes that an automobile properly handled will last much longer than one neglected. It is just as true of humans. You have but to look around you to realize the truth of this. How many of your own acquaintances, very probably in your own families, have met with early death or untimely physical incapacity, through excess or neglect which were apparent to everyone but the victim? And the procession of chronically ill people through the hospitals and doctors' offices bear powerful witness to the neglect the average person gives to his own body.

Practically no day goes by that I do not have to pass a verdict of shortened life on some individual and in most of such cases, the incidents of that individual's history impel the question, "Why have you neglected this?" and the usual answer is, "I didn't think it would amount to anything." And daily I find severe and oftentimes irreparable damage to human structures which were not even suspected by the unfortunate. In most of them there could have been avoidance, or at least material lessening of the damage had the condition been recognized earlier.

The women of the city have had an important charity in the local babies' clinic. They have supported

the anti-tuberculosis movement with enthusiasm. They have seen the splendid savings in health and the actual saving from untimely and unnecessary death as a result of their work. They have been convinced of its desirability and I doubt whether they would permit its discontinuance.

But what of yourselves and of your families of adult age? You are practically immune from the diseases and disabilities incident to childhood and these things are the very ones which sanitation and prevention have robbed of their community dangers. You are protected from smallpox by well nigh universal vaccination. You are protected from typhoid by eternal vigilance of the sanitary authorities, but what measures are you taking to prevent heart and kidney disease which begin to take their toll at your ages and in your households? One hears execration of alcohol and of social disease as a deadly danger, but heart diseases alone, nearly all preventable, take twenty lives every year to every one that alcohol has taken. The mother always carries the burdens of illness and sorrow, and it is to her eyes usually that the early evidences of oncoming disease become apparent. When you, as actual or potential mothers, realize that at least half of the crippling disabilities and infirmities may be avoided by preventative measures, the medical profession will have your earnest and hearty support in this movement of prevention. And to justify the need of your cooperation, may I quote some graphic facts and apply them to Newcastle.

It is a fact that ten per cent of our population are always ill. In Newcastle then, there are approximately two thousand people ill at all times. Of this two thousand there will be about forty cases of T. B. and the same number of cancers. There will be two hundred and fifty ill with circulatory diseases and one hundred and fifty with chronic kidney disease. And the life of these four hundred and eighty persons will be shortened by from twenty to forty years, to say nothing

of impaired earning capacity, the suffering they must undergo, and the tremendous discomfort and unhappiness imposed upon themselves and their families. And a larger part of these conditions might have been prevented.

If we eliminate from discussion these diseases which you readily recognize as fatal, let me quote what apparently simple conditions may do to lessen the span of human life. An actuarial investigation of two million persons by the New York Life Insurance Company shows that of those with a rise in blood pressure to but one hundred and forty-one, there is an excess mortality of nine per cent while the excess mortality rate goes to sixty-three per cent in those with a pressure of one hundred fifty-two and two hundred and thirty-six per cent excess mortality with a pressure of one hundred seventy-one. And yet, no day goes by that I do not find a blood pressure of one hundred seventy or above on some person who did not even suspect it. At the age of forty-five, forty pounds overweight shows an excess mortality of fifty per cent. In other words, three die when but two should. I might go on indefinitely with this, but let me quote but this one finding based upon actual experience in a health examination clinic, based upon supposedly healthy people.

In forty-one hundred consecutive persons, taken just as they appeared, only seventy-four had normal teeth and fifty-eight per cent or twenty-seven hundred, had actual root abscesses. Six hundred and fifty-eight had well marked heart damage, and four hundred ninety-two had combined heart and kidney damage. And of these more than ten per cent had no idea of anything wrong with them.

You ask why and how supposedly sane persons neglect themselves. The answer is "Lack of knowledge primarily, and the human factor of blind optimism and disinclination to face disagreeable facts." You ask how may such losses be reduced. By prevention and by early recognition of incipient disease. I have told you

that we have made little progress in bettering results in those already damaged. And we have little prospect of securing better results. We must do as you in this Federation have done with the babies and the tubercular. Prevent or begin care while disease is incipient and trivial.

And before proposing a method, may I briefly state the position of the medical profession, that we may not be accused of self interest and what I state as to the attitude of the profession is the whole truth, and nothing but the truth.

From earliest recorded history, the man of medicine, even if he used but water and heat, so far as his professional relations are concerned, has been a cult closely aligned in purpose and integrity with religion. The earliest physicians were in fact priests, and as an heritage from our forefathers, as a constant and shining purpose, in recognition of our special privileges, it is an ancient tradition invariable and absolute, that disregarding all motives of selfish interest, we shall advise those who trust us for their good solely, that no reputable physician shall ever keep as a secret or withhold information concerning any measure or any device which shall alleviate human suffering, but shall modestly and truthfully spread to his brethren every advance and helpful experience, and shall conscientiously advise every individual who shall come to him and shall without fee, and without hope of favor, inform the public at large of such matters as may benefit the community. The governing body of medicine, The American Medical Association, has officially stamped with its approval, the method of periodic physical examination as a remedy against unnecessary, avoidable, and preventable illness, incapacity and death.

By that is meant a health survey at regular times by a competent person. A survey which is not a mere casual inspection and questioning, but a complete, thorough-going examination, not only of the bodies, but the habits, minds, occupations, troubles and pleasures of the individual, not with a prying intention,

but that he may be properly advised.

It will require a special training for the examiner must appreciate normals, not abnormals, he must not specialize on one part, but survey the whole. In the experience of one New York clinic, simple dietetic and hygienic advice, was sufficient for over fifty per cent of those showing minor impairments. Particularly is that true of dietetic advice for it is a truism that most Americans are digging their graves with their teeth. The principle of this recommendation is recognized by the keenest business minds. More and more of the greater business organizations are going into periodic physical examinations on large scale, not for humanitarian motives, but to keep fit and efficient, their best men. Our own Chrysler plant within the last sixty days, had every executive in the Newcastle plant go through an exhaustive physical examination. They were not seeking excuse to drop men, but to ascertain minor and unrecognized ailments which might be eliminated and the most efficient services of these men be held intact in their rush periods.

Does it pay? Has it paid? The life insurance companies were the first of the great business corporations to investigate the advisability and practicability of such measures. From 1914 to 1916, one great company made such examinations on six thousand white males of all ages and all occupations scattered evenly throughout the country, all presumably in good health. Recommendations were made for the repair of apparent defects and advice given for the prevention of other defects due to bad habits or conditions of life. These men were carefully followed up for five years, and then their illness, incapacity, and death rate were compared with six thousand men of similar ages and conditions who, apparently, were in as good health in the beginning, but had no examination, and received no attention, other than they might seek for themselves.

I will not tire you with a mass of statistics, but sum up the conclu-

sions of this cold, calculating company, which is interested only in results that affect its income and outgo. In these groups, there were to be expected under standard mortality tables which, by the way, are uncanny in their exactness, three hundred and three deaths. In the examined and advised group, actually there were two hundred and seventeen, a saving of seventy-two lives, varying between twenty and forty-five, in five years. Apply these figures to the estimated population of Newcastle and it means two hundred and twenty-five lives saved or an average of one life a week. Do you know of anything that pays bigger dividends? Not only does it mean life saving, but as a corollary, extension of life, extension of usefulness, lessening of suffering and of illness, lessened financial losses to the individual and incidentally to the community. Even if the abstract idea does not appeal to you, suppose you apply it to your own household and relatives for a moment. I will hazard a guess that there is no person here who cannot definitely recall at least one person closely attached to them who might have been benefited in health, possibly even a saved life, had periodic physical examination been in vogue ten years ago and they could have had early warning of incipient physical damage.

I beg you to remember again that this is not a plea for additional work for the medical profession. We have more than we wish now with the increasing population and the lessening number of young men going into the profession, due to the exceedingly strict requirements. We will be always sufficiently busy attending to minor requirements and acting as counsellors, but we are humanly selfish in preferring to see our work changed from severe, intractable and ofttime hopeless endeavors, to the rectification of early and trivial disease in which one may ordinarily expect prompt and happy results. We do not expect to bring on the millennium. We do not hope to banish illness and death, but we do, and I believe, fairly, may expect,

with competent periodic physical examination, to lessen illness in those between twenty and sixty, to prolong the average life of the adult and to minimize the economic loss among those who carry on the work of the world. And we feel that we are suggesting the adoption of a custom certain of wide adoption to the greater health and happiness of the community and the nation.

While public and private clinics for this work are now being operated in many of the larger cities and their number are constantly being increased, it is not believed that the time is ripe for any concerted public effort towards a public clinic of this kind in this community, for first there must be an individual acceptance of the custom among the leaders. Then, with its advantages apparent, the custom will spread quickly and in this and other progressive communities, public free clinics will offer this service to the poorer and less thoughtful classes.

Because the women of a community always lead in movements which better mankind, because they are inherently progressive, inherently unselfish and through ages of domestic responsibility, inherently attentive to the welfare of those dear to them, it is a pleasure to discuss this next great medical offering to the welfare of humanity first of all with the women of the community.

HE WHO LAUGHS LAST!

A very interesting incident comes to light in connection with smallpox vaccination in North Carolina. During a vaccination campaign the parents of a large family refused to allow the children to be vaccinated. One of the girls, however, slipped away and without consent was vaccinated. As her vaccination "took" the others of the family laughed at her sore arm and did not fail to remind her of her "reckless" act.

Within the past year six members of that family contracted smallpox, while the "reckless" girl was immune and without one single bump.

"He who laughs last laughs best."

WHAT THE PUBLIC HEALTH NURSE IS EXPECTED TO DO

By MISS IRMA FORTUNE

A public health nurse is a graduate registered nurse with public health training employed in a community to safeguard the health of its people. She is there to teach the laws of health as they apply to each member of the community from the baby in his prenatal period on through the different stages of growth and development to grandparent. The extent of her work must depend upon the area of the county or town within which she is to operate, its population, and the number of its schools.

The school is naturally the logical place to begin work, since the nurse is a teacher of health and the easiest point of entry in a county is through the schools. Here she comes in contact with large groups of children and through them gains access to the homes.

The nurse, upon request, assists the teacher in organizing health leagues in each school for inculcation of good health habits, and to encourage health and physical education. Home Hygiene and Care of the Sick classes are taught to both school and adult groups, thus enabling them to care efficiently for the sick in their homes, and often to prevent serious illness.

Health teaching in the schools is in a constant state of evolution. At the present time the popular health ideal in the schools throughout the State is that of "The Five Point Child." The "Five Point" child is one who satisfies the requirements of the present minimum standard of physical fitness, and who, according to the judgment of the teacher, has no obvious defects of: (1) Vision, (2) Hearing, (3) Teeth, (4) Throat, (5) Weight.

The nurse assists the teacher in the discovery of these physical defects and does all in her power to win the confidence and overcome the

fears of both parent and child, in regard to having the necessary corrections made. When people are financially unable to pay the regular fee of a specialist for corrective work, special clinics are arranged in order that a number of children may be cared for on the same day, at a price commensurate with the family income. By such a method no child is neglected, but all share equally in the right to enjoy good health. Children who have become "Five Pointers" show much interest in the condition and health habits of smaller brothers and sisters.

The public health nurse is a frequent visitor in the home, and here performs her greatest service. She has an opportunity to teach expectant mothers the value of adequate supervision for herself, and proper preparation for the coming of the baby and its care after birth. She also has an opportunity to recommend the Correspondence Course for Mothers, conducted by the State Board of Health. This course has been the means of conveying instruction to hundreds of mothers whom the nurse cannot reach, and also gives details that cannot be explained by the busy nurse in the wide territory she has to cover. The nurse can also help to guard the health of the child from infancy to school age, to call to the attention of parents any symptom of a defect which might interfere with the proper growth and development. She teaches them to appreciate the appearance of a healthy child, so that at the first appearance of abnormal symptoms they would consult their family physician.

The pre-school child, about to enter school for the first time, is the recipient of especial attention. Every effort is being made to have all children receive a medical examination in the presence of their parents so

as to have any defects discovered and corrected before entering school. Parents are urged to have their children immunized against smallpox, diphtheria and typhoid fever, so that they will be free to acquire an education without losing time on account of these diseases. Many children have to repeat grades each year because of time lost by preventable illness or by being handicapped by physical defects. It is estimated by the State Board of Education that it costs the people of Virginia an average of fifty dollars each time a child repeats a grade in one of the public schools. The timely prevention or elimination of these defects would save the taxpayers many times the salary of the nurse.

The nurses note carefully the home surroundings of the children, and advise the owners as to the importance of proper ventilation, heating and screening, of making sure

of pure drinking water, a wholesome, clean, food supply and safe sanitation. No one is free to enjoy good health until the importance of clean home surroundings is understood, and all possible steps have been taken to have the best.

The public health nurse may be employed by a county cooperating with the State Department, or one or more civic associations may combine with the official agencies and provide part of the funds. The success of any service will depend largely upon the efficiency of the nurse and her individual ability to establish and maintain cordial and sympathetic relations with the local authorities, physicians, teachers, parents, children, and the general public; also, upon the friendly understanding and intelligent cooperation of those having immediate supervision of her work.—Community League News.

FEEDING THE RISING CITIZENS

Plain food for high thinking should be the aim of the mother when she packs the lunch box for her rising citizens to take to school. Probably the relief from noise and worry the mother feels when her children go back to school is overshadowed by the worry occasioned by providing the right kind of lunch for these same children.

The main thing to consider is plenty of simple food, for growing children need a lot of food and the right sort of food. Too much fat or oily food is rough on digestion, and proper digestion is really the foundation of health. Highly flavored or spiced food is a poor choice. Excessively sweet foods are unwise.

Whole wheat bread is excellent. Vegetables are good. Fresh fruit is ideal. Baked or broiled meat that is not too fat is desirable. Each child should have a pint of milk, for health experts are agreed that it is the ideal balanced food for growing children. Plain cake may be added.

School children should have warm lunches. This is easily solved for local children, for practically all of

them go home for the noon meal. The rural child is a different problem, and it is well nigh impossible to provide hot lunches from home.

Right here it occurs to us that lunch rooms under the supervision of the home economics department might be established in our larger schools. In this way the home lunch might be supplemented with hot soup, chocolate or some other well-prepared hot food. In fact, we are inclined to believe that a cafeteria, operated on non-profit basis would be a good idea for the bigger schools in the county. This is a feature that more and more schools are adding with most gratifying results.

For the small country schools arrangements might be made by the teacher to prepare hot chocolate and soup for her pupils, each of whom contributes his or her proportional share of the expense. These are easily prepared over the school stove or arrangements with a nearby neighbor might be made.—Chatham News, Siler City, N. C.

The hardest people to convince are often the most grateful afterwards.

WHY MORE FRUIT?

Fruits are natural tonics, superior to the drug store supply.

They supply bulk and mildly laxative substances to prevent constipation.

They protect us from diseases, by giving us minerals and vitamins.

They lend attractiveness and variety of flavor to diet.

They give some energy, they add calories—and should not be taken simply as a relish or appetizer.

Eat some raw fresh fruits every day, such as oranges, grapes bananas, grapefruit, lemon, pears, pineapples, berries, apples. Be very careful to wash thoroughly all raw fruit before peeling or eating. The person with normal digestion should eat peelings of apples, grapes, pears. Young children should not eat peelings.

Consult a physician about giving raw fruit to small children. Tomato or orange juice strained may be given to children—one teaspoonful for babies three to six months; one tablespoonful for babies at six months, and the juice of an orange by the time the baby is one year old.

Bananas should be eaten only when ripe. They are ripe when the outside skin is dark brown. They are overripe when not firm. Always scrape away the white stringy material and one-fourth inch at ends.

No minerals or vitamins are lost from fresh fruit.

Peelings of apples, pears, grapes, plums are good for mastication, for cleaning teeth, for bulk.

Cook fruit (when it must be cooked) in a small amount of water, covered tightly, and only until tender. Use very little sugar; add it just before removing from fire. Only one-half the usual quantity is then necessary.

Dried fruits have much less vitamin than fresh fruits. They are often less easily digested than fresh fruits. They are comparatively cheap.

Dried fruits should be thoroughly washed, then soaked in lukewarm water, and cooked tightly covered

in the same water in which they were soaked. Sugar is usually not necessary. If used add only a small quantity just before removing from fire. Much flavor and health value are lost in over-cooking. Cook only enough to make tender. Use the juice. Raw fruits, for those old enough or well enough to digest them, are best.

Dates, figs, prunes and raisins are rich in iron.

Bananas, alligator pears and plums are rich in energy value.

Orange, lemon, grapefruit, and tomato are especially rich in vitamin. —Farmers Federation News.

NORMAL FEET DON'T NEED HELP TO SUPPORT ANKLES

Normal feet do not need high shoes to support the ankles. The ankles should be able to support themselves if the shoes fit properly, or if one goes barefoot.

If the ankles are weak and rolled down on the inner side, an elevation of leather under the inner margin of the sole will be the most efficient support.—*Hygeia*.

BABIES MAY BE TRAINED TO TOLERATE COW'S MILK

Some babies are unable to take cow's milk, or any other kind. Since milk forms a large part of a baby's diet, this is a serious difficulty. Nausea, vomiting and the development of a rash after taking milk are some of the symptoms of this idiosyncrasy against milk or other proteins.

The child may outgrow this sensitiveness, or it may be overcome by various means. Boiling the milk for ten minutes will enable some babies to take it. Another way is to give a very small amount at a time, gradually getting the child used to the milk until he can take a pint a day. It may be necessary to start with one thirtieth of a drop of milk. This amount should be determined by a skin test.—*Hygeia*.

WASH YOUR HANDS

At the entrance to every Moslem Mosque there is a lavatory where the faithful may perform their ablutions before entering within the sacred portals. This was suggestive of purity and cleanliness. We might well learn from these Orientals some valuable lessons, not so much perhaps on the spiritual side, although even that wouldn't hurt us very much, but more especially on the physical aspect.

When Moses compiled his sanitary code he gave it an ecclesiastical setting. In this way he was able to make it effective. Through all the centuries it has stood as a masterpiece. In it washing and purification are emphasized and given a very important place. Part of this may have been symbolism but in addition to this, undoubtedly there was a background of truth. To eat with unwashed hands should be taught as an unpardonable breach of social and hygienic ethics.

A few years ago the slogan "Swat the fly" was started for the purpose of exterminating that pesky little individual, the common house fly. There had been laid to his door the crime of feasting on infected material, getting his feet covered with germs, visiting the homes of the people about mealtime, and depositing on the food those pathogenic organisms, causing various disorders such as dysentery, typhoid fever, tuberculosis, diphtheria and others. After a fair trial he was convicted as he should have been. The fly, however, is innocence personified when compared with our own hands. There is no mess too foul for them to get into and there is nothing that is so chronically infected as they are. If you doubt it, ask the surgeon, and note the care with which he scrubs up before an operation; and the best he can do is only about 85 per cent of being surgically clean. To help out on the other 15 per cent he uses sterilized gloves.

What then must be their condition when unwashed?

Were it not that they are usually uncovered and exposed to the light

and air—our best natural disinfectants—they would be a menace to health. Think of some of the diseases whose causative agents find an entrance through the mouth or nose; diphtheria, scarlet fever, smallpox, measles, infantile paralysis, typhoid fever, tuberculosis, chicken pox, mumps, whooping cough, etc. Quite a large family, sure enough. It is easy to see how the germs of these diseases may be transferred from infected hand to the food and thus gain entrance to the system. It would be a great lesson in personal hygiene if in every public school there were facilities for hand-washing. If it was made a regular order of business before the lunch hour, it would form a health habit that would have a very far reaching effect.

Aside from being suggestive of cleanliness and ordinary decency, it would serve the very useful purpose of preventing many a bad cold, a flu, a sore throat, or worse. Soap and water followed by fresh air and sunlight are among our best disinfectants. They are within the reach of every one and should be cherished as our protectors and friends. We might go far and serve worse than by adhering to the teaching of Moses in these respects.—The Pennant, N. D.

TWO MORE OR TUMOR?

Bill Jones' wife had gone to another city to consult a doctor. Bill celebrated the occasion by sending the children to their grandmother and inviting some friends out for a poker party. While the game was in session the telephone rang.

"Western Union speaking" said the impersonal voice on the 'phone. "Telegram for Mr. William Jones."

"Read it," said Jones, nervously.

"Regret to state your wife has tumor, signed, F. B. Hopkins, M.D."

Jones dropped the receiver and turned a white face to his friends.

"Heavens," he said, "my wife has twins."—Exchange.

CARELESS COUGHS SPREAD COLDS AND INFLUENZA

Colds and influenza are spread by careless coughing, sneezing, spitting, and by using the same drinking vessel or towel others have used. Colds and influenza are catching, very much so. Keep away from people with colds, influenza (grippe), "sniffles" and coughs. If people suffering from colds and coughs are not careful to cover their mouths when they cough or sneeze, shun them as you would any public menace. They are a public menace. Do not run from a person who covers his mouth when he coughs in a public place; if you do you make it harder for people to observe the precautions they should to keep from spreading infectious respiratory disease, among them the dread tuberculosis. Cover your own mouth when you cough or sneeze and insist on your neighbor doing the same thing. If he doesn't, you had better shun him, at least, until he stops coughing and spitting on anything and everything, and the world in general.

How To Avoid Colds

To avoid bad colds live, work and sleep in the fresh air. Avoid sudden chilling and overheating, wet feet, constipation, intemperance, and over-heated, overcrowded, unventilated rooms, churches, offices and stores. Keep healthy, strong and robust. Healthy people ward off colds. Weak, rundown people catch cold easily. If your cold keeps recurring, have a medical examination to determine the cause.

Colds are very dangerous. They pave the way for more serious diseases. Avoid them altogether if you can, if you can't cure them as soon as possible after they begin. A slight headache, chilliness, feverishness, "running of the nose," sneezing, hoarseness and sore throat are usually the first symptoms of an oncoming cold. When you have these symptoms it is best to go to bed at once and call your doctor.

Cure of Colds

There are some simple home remedies that may be taken. A good dose of laxative, lots of hot water to drink, hot lemonade and hot foot bath in a warm room, going to bed afterward

with plenty of cover to keep warm and keeping the air fresh in the room. Omit one or two meals, then eat fruits, vegetables, bran gruel and bulky foods. It is usually best to call your doctor at the very first indications of a cold, but if you do not and the cold does not improve in twenty-four hours, call him by all means. Pneumonia may be developing.

To Keep From Taking Influenza

To keep from taking influenza keep away from crowds, especially indoor gatherings. Again, and still again, and again, avoid people who cough, sneeze and spit without holding a handkerchief over the nose and mouth. Do not use common drinking cups or towels. Keep the bowels open. Gargle mouth and throat, rinse out nose with warm salt water, using a level teaspoonful of salt to a glass of warm water. Sleep and eat regularly. Keep in the open air and sunshine and have good ventilation where you work and sleep. Wash your hands always before eating, and never put your unwashed hands in your mouth. Do not give the disease to others. Always when you cough or sneeze, cover your mouth with a gauze or handkerchief.

Symptoms and Cure of Influenza

People stricken with influenza usually feel sick suddenly. The person is weak, has pains in the eyes, ears, head or back, and may be sore all over. Some feel dizzy, some vomit, feel chilly and then have a fever that sometimes goes rather high. The person with influenza looks sick. His eyes and the inner side of the eyelids are bloodshot or congested, the nose runs and some cough. When you have any of these symptoms go to bed and call your doctor and follow his directions until he tells you it is safe for you to get up. This should not be until you have been without fever for at least four days. While you are ill allow no one to sleep in the same room with you, and sneeze and cough into cloths that can be burned.

To Stay Well of Influenza

The patient recovering from influenza must be very careful. Influenza

is a treacherous disease. If you escape pneumonia during or immediately following the attack the lungs and respiratory system are frequently so inflamed that tuberculosis develops. In people who have tuberculosis it is particularly dangerous. If all symptoms of the tuberculosis have disappeared it is liable to bring on a recurrence of these symptoms, and in persons with active tuberculosis it may cause a turn for the worse that many times proves disastrous.

The person getting well of influenza must take every care of themselves. If complete recovery does not take place within two weeks, have your family physician carefully and thoroughly examine every vital organ and function of the body. Follow the instructions your doctor gives you after such an examination.

It is not dangerous to care for a person who has influenza if the proper precautions are taken. The dangerous person is not the man who is sick in bed, but the one who goes about coughing, sneezing and spitting in a careless manner. Influenza and la-grippe are the same disease. There are no vaccines or serums for influenza. Don't waste your money on patent medicines. They are dangerous. Don't give influenza to others, and do not let others give it to you.—Sanatorium Sun.

FEWER CLOTHES—MORE SUN— FOR BABIES

The institution of sun baths for babies and young children in any American community is not easy because tradition and convention have been opposed to them for many generations. Climatic conditions in many parts of this country make warm clothing a necessity during the winter season. During the spring, summer, and fall, however, babies and little children wear much more clothing than is necessary. One has only to take off a baby's or a little child's clothes and watch him play in the sun to know that it is convention and not instinct which demands clothes at this age. Tradition also says that sunlight may injure a baby's eyes. If the

baby's face is turned so that the eyes look away from the sun or if the older child wears a cotton shade hat in hot weather, the eyes will not be injured. Old traditions and conventions are hard to break. New traditions and conventions must be established by small groups and slowly the rest of the community will follow.

The technique of the sun bath will vary somewhat according to locality, climate, season, weather and facilities in the home. Sunlight is free to all and sun baths can be given to all babies at some season of the year. Southern babies can have outdoor sun baths the year around. Northern babies are less fortunate, but even in our climate partial sun baths can be given nearly all the year and complete sun baths all the summer months. In practically all parts of the United States, preliminary outdoor sun baths can be started by the first of March. A corner of the yard or porch should be selected where the morning sun shines warmly, but where the child will be protected from the wind. Here the baby's hands and face and head may be exposed to the sun for varying lengths of time beginning with five or ten or even fifteen minutes and increasing gradually during the month as the sun gets warmer. If the baby is turned first on one side and then on the other, both cheeks may be exposed without injury to the eyes. The hands may be exposed, at first, one at a time, later both together. The bonnet may be pushed daily further back until the whole head is exposed. In many parts of the country these preliminary sun baths may be started in February or even January. During these sun baths in early spring, sunburn need not be feared, because the intensity of the sunlight is not yet very great. Later in the season shorter exposures may be necessary at first.

"Bobbie, I hear that you have another baby at your house."

"Yeh, nurse, we have, and maw says if we get one more we can get in the News Reel at the picture show."—Exchange.

EXPECTANT MOTHERS NEED SPECIAL CARE

Of the 20,000 women in the United States who die each year from conditions associated with childbirth, 15,000 could be saved by adequate prenatal care. Sixty-six per cent of the babies born dead die because the mothers did not have proper care.

Many of the severe complications of childbirth, such as kidney trouble or excessive vomiting, can be corrected or avoided altogether if the prospective mother consults her physician early. The food of the prospective mother, the amount of exercise and rest, her clothing and the condition of her general health should be carefully regulated according to the advice of her physician.

The teeth should be given more than the usual care, for they are particularly apt to decay during this period, but there is no reason why the prospective mother should lose "a tooth for every child," as the old saying has it. She should consult her dentist at least three times during the nine months' period.

A baby born prematurely has less chance of living than one born at full term. Premature birth can be avoided in many cases if the mother has consulted her physician early enough during the period.—*Hygeia*.

TRAINING FINICKY CHILDREN TO EAT

How to make a child eat is a question that troubles a great many parents. The mother learns just what foods her child should have and prepares them properly, but how get the child to eat them?

One important step toward this goal is to secure the cooperation of the father. If a child sees his father eating spinach or carrots and enjoying them, he will want to eat them in order to grow big and strong like daddy.

Small servings will often encourage a child, while the sight of a large amount of food appalls him. It is

easy to eat a few mouthfuls, and gradually the amount may be increased. Dainty service and attractive color combinations will appeal to the child. He will not eat carrots alone, but combined with peas, he may like them.

Highly seasoned foods, such as pickles, dull the child's appetite for the bland, more nutritious kinds. Indiscriminate eating between meals will take away the child's appetite for his regular meals. If a child will not eat at meal time, he should not be allowed any food until the next meal. One or two meals may be safely skipped, and often this radical method is necessary when the child fails to respond to other methods.—*Hygeia*.

CAN'T BLAME PARENTS FOR CLEFT IN PALATE

Cleft palate and hare lip are not the result of maternal impression, says Dr. Vilray P. Blair. The condition may be considered a mistake of nature, occurring when the tissue seams from the tip of the soft palate through the gum and lip fail to close.

As growth proceeds under these conditions, the surrounding parts are pushed apart and become increasingly deformed. Surgical correction should, for this reason, be made as soon after birth as possible, although it is then more difficult.

Mechanical appliances are generally not as satisfactory as an operation, because they must be changed so often during growth and because they do not give the best speech results.

A child with a cleft palate is particularly susceptible to respiratory and ear infections, which may result in deafness. This, together with the speech defect, will seriously handicap such a child, besides making him unhappy and perhaps fostering an inferiority complex. For this reason, also, an early operation to correct the defect is advised.—*Hygeia*.

IS DANGEROUS TO REMOVE HAIR BY X-RAY TREATMENT

Although X-rays will cause hair to fall out and prevent new hair from growing, the amount necessary to achieve this result is likely to injure the skin. Such injury may take the form of wrinkling, scarring, discoloration and warty growth, and will be permanent. There is no way of removing or covering the injury to the skin made by X-rays.

Depilatories remove the hair close to the skin. Neither depilatories, shaving, clipping or tweezering will increase the amount of hair or make it coarser. Dark superfluous hair can be made less conspicuous by bleaching it with fresh peroxide of hydrogen.

The only safe way to remove superfluous hair permanently is by means of the electric needle, or electrolysis. The work should be done by an expert.—*Hygeia*.

NUMEROUS FACTORS MAY AID IN CAUSING BOILS

Boils are the result of nature's defense against harmful bacteria. When bacteria enter through a break in the skin, the white blood cells form a barrier around them to prevent their spreading into the blood and causing severe illness or possible death.

There are a number of causes of boils. Friction is the commonest. Picking at the skin is another. Un cleanliness, lowered resistance, working in cold, damp rooms are other factors. Chronic constipation, infection in teeth, tonsils or sinuses may make a person susceptible to them. Too much sugar in the diet is sometimes a cause.

One should not tamper with boils. Squeezing them destroys the protective wall around them and permits the bacteria to enter the rest of the body. Pricking with a pin is apt to cause further infection. Patent medicines and tonics to "purify the blood" will not help and may do harm. They should be avoided.—*Hygeia*.

LISTS SEVERAL REASONS WHY CHILDREN ARE TIRED

Inadequate food, inadequate sleep, excessive social activities, excessive amounts of outside work, such as carrying newspapers, clerking and similar occupations, and excessive amounts of housework and home study are the most common causes of chronic fatigue among school children.

Poor ventilation, bad lighting, speed tests in school without enough rest periods, and tired, irritable teachers are additional factors that contribute to the tired feeling on the part of the child.

Furthermore, the child is taken out of his natural atmosphere of sun, fresh air and freedom and is therefore subjected to increased nervous strain while he makes the readjustment.

Theatrical displays, sports and vacations take care of the tired business man or mechanic. The tired child should be given more attention. Sleep is most important. Children should have a daily nap immediately after lunch, in the opinion of prominent child specialists.—*Hygeia*.

STATE FORESTS NOW OFFER HEALTHY VACATIONS TO ALL

A pleasant, healthful way to spend a vacation is to camp in the national or state forests. Public camp sites for the use of tourists and others have been established in practically all of the forests.

Fireplaces, pure water supplies, comfort stations, garbage containers, tables, benches and tent space are provided in nearly all of the camps. The only obligation of the campers is to guard against forest fires by exercising care in putting out camp fires.

Information may be secured from the Forest Service, Department of Agriculture, Washington, D. C., and from the forestry departments of the various states.—*Hygeia*.

TEN COMMANDMENTS FOR BOIL SUFFERERS

1. Never squeeze a boil.
2. Never pick a boil with a needle or pin.
3. Never pull hairs from the nose, pick the ear with sharp instruments, or pull out ingrown hairs from the face with the nails
4. Don't use poultices.
5. Don't buy "patent medicines" to purify the blood if boils are present.
6. If subject to boils on the neck, do not wear stiff collars and do not permit the barber to shave the neck.
7. Don't interfere with boils until they come to a head.
8. Have the urine examined if the boils come in crops.
9. Never try self-treatment on the lip or nose.
10. Always observe the rules of absolute cleanliness.—*Hygeia.*

NURSE TELLS YOU HOW TO VISIT SICK FRIENDS

"There should be a law forbidding persons to rush to the home or hospital to visit the sick," growls the exasperated surgeon whose patient has been made worse by the visit of an acquaintance.

Without recommending such extreme measures, Lydia M. Piatt does make a number of suggestions for visits to the sick. Under proper conditions, such visits may be beneficial.

A visitor should be cheerful and quiet; should choose appropriate topics of conversation, but should not talk too much; should limit the visit to the time allowed by nurse or physician, and should make the leave-taking as brief as possible.

The patient may ask the visitor to read to him or to do some errand, but the visitor should refrain from rearranging the bed or anything in the sickroom unless requested to do so. The visitor should never suggest remedies or cures, and it is best not to discuss the illness at all unless the patient persists in doing so himself.—*Hygeia.*

TEACHER LOSES 52 POUNDS BY RESTRICTED DIETS

To lose 52 pounds in seven months is no mean achievement. A school teacher and his wife, who also teaches, accomplished that without losing a day of work, and without altering their routine in any way, except to decrease the amount of food eaten.

The week was divided into two periods, one from Sunday to Friday for reducing and the other of Saturday and Sunday for maintaining their weight at the level of Friday.

By eating three meals a day at the regular hours, they suffered no inconvenience or discomfort due to hunger or headaches. A light lunch just before retiring gave them comfortable nights.

The reducing diet included 1 egg or a small portion of meat, 1 pint of milk and plenty of fresh fruit and vegetables, making a total of 875 calories a day. The maintenance diet was larger, reaching 1,750 calories a day and including bread, butter and dessert in small amounts.—*Hygeia.*

MAY PREVENT LOCKJAW BY PROMPT TREATMENT

Prompt cleansing of the wound with adequate antiseptics is of chief importance in preventing lockjaw.

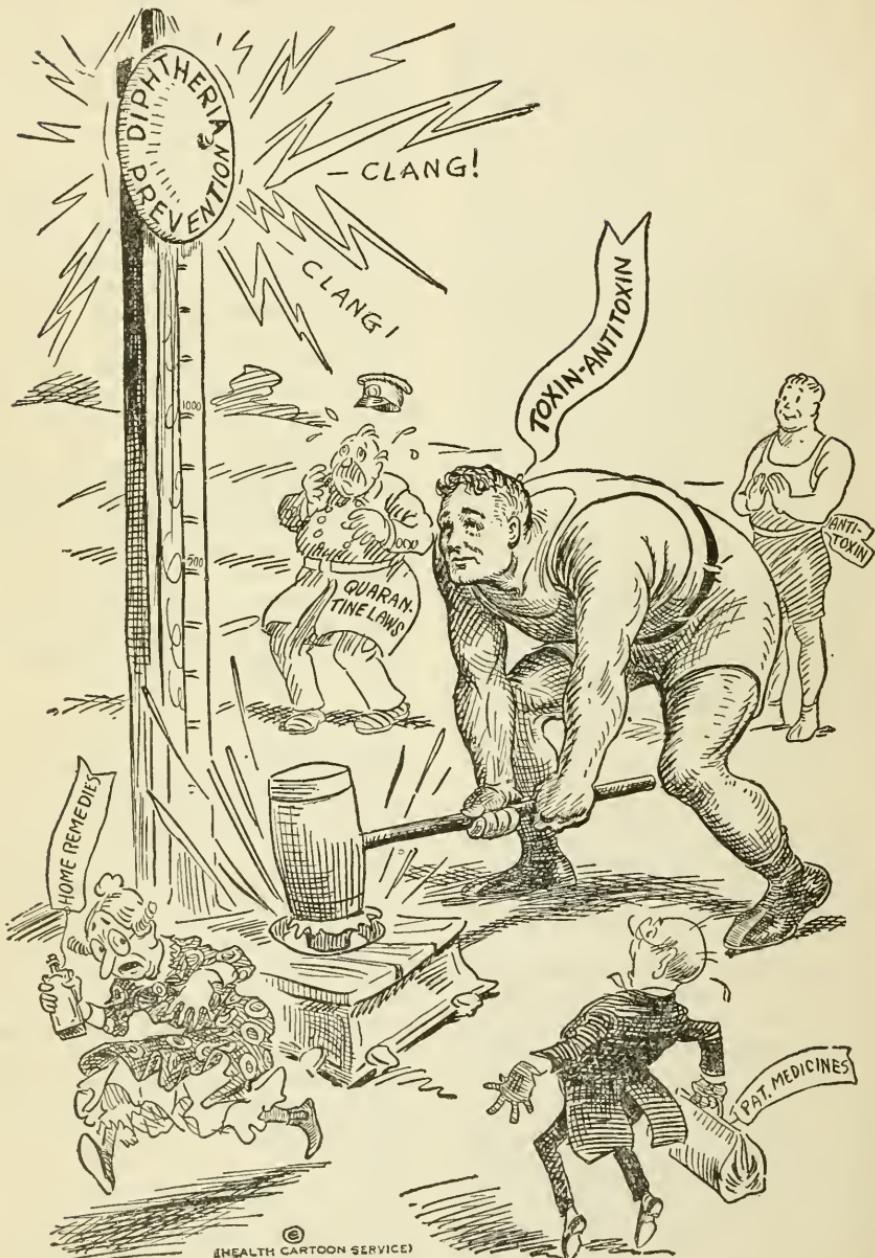
The development of symptoms of the disease demands the prompt use of the antilockjaw serum. However, it does not develop sufficiently often to warrant giving it to every one who is accidentally wounded. In one group of steel plants only two cases of lockjaw developed out of 300,000 open wounds treated in fifteen years.—*Hygeia.*

"Now, then, Jones Minor, what do you mean to be when you leave school?"

"Please, sir, I should like to be a doctor."

"Well, you certainly have the qualifications of illegible writing."

PROTECT THE CHILDREN



Toxin-Antitoxin Prevents Diphtheria



The

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CHARLES O'HAGAN LAUGHINGHOUSE, M.D.,
State Health Officer

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FREE HEALTH LITERATURE

The State Board of Health publishes monthly **THE HEALTH BULLETIN**, which will be sent free to any citizen requesting it. The Board also has available for distribution without charge special literature on the following subjects. Ask for any in which you may be interested.

Adenoids and Tonsils	Fly Placards	Sanitary Privies
Cancer	German Measles	Scarlet Fever
Catarrh	Hookworm Disease	Smallpox
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Diphtheria	Pellagra	Venereal Diseases
Don't Spit Placards	Public Health Laws	Water Supplies
Eyes	Prenatal Care	Whooping Cough
Flies		

FOR EXPECTANT MOTHERS

The Bureau of Maternity and Infancy has prepared a series of monthly letters of advice for expectant mothers. These letters have been approved by the medical profession. They explain simply the care that should be taken during pregnancy and confinement, and have proved most helpful to a large number of women. If you want them for yourself or a friend, send name to the State Board of Health, and give approximate date of expected confinement.

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NEW STATE HEALTH OFFICER

Dr. Charles O'Hagan Laughinghouse of Greenville was formally inducted on October 1st, into the office of Secretary of the State Board of Health and State Health Officer, the office to which he was unanimously elected at a called meeting of the State Board of Health held on June 21. He succeeds Dr. W. S. Rankin who resigned May 30, 1925.

The new State Health Officer is a native of Greenville, N. C., and is now in his fifty-sixth year. He was educated at the University of North Carolina and the University of Pennsylvania, graduating in medicine at the latter institution in 1893. He was licensed to practice medicine in North Carolina the same year, and for the past thirty-three years has been an active general practitioner in Greenville and Pitt County. In 1902 he was elected a member of the State Board of Medical Examiners, serving six years. In 1911 he was elected to membership on the State Board of Health, on which he served until his resignation in June, 1926. Since 1921 he has been a member of the executive committee of the Board. In 1917 the Medical Society of the State of North Carolina made him president. He has also served as president of the Tri-State Medical Society of North Carolina, South Carolina, and Virginia. During the World War he served overseas as Lieutenant-Colonel in a hospital unit.

The formality of induction into office was brief and simple. The oath of office was administered by Associate Justice George W. Connor of the Supreme Court in the presence of the members of the executive staff of the Board. Dr. Laughinghouse briefly expressed his pleasure at the honor con-

ferred upon him and a keen appreciation of the responsibilities pertaining to the duties he was assuming.

The following changes in the personnel of the administrative staff were announced.

Dr. G. M. Cooper, who has been acting state health officer since the resignation of Dr. Rankin, at his own request is assigned as director of the Bureau of Health Education, which is concerned primarily with the preparation of the educational publications of the Board. During October Dr. Cooper took a needed rest.

Dr. M. L. Townsend, director of the Bureau of Health Education since December, 1924, is resigning effective November 1st. Dr. Townsend goes to Washington, D. C., where he will conduct a private sanatorium for the treatment of psychopathic cases.

Mr. Ronald B. Wilson is appointed assistant to the secretary. Mr. Wilson has been with the Board since 1918, serving as publicity specialist.

In assuming the duties of secretary and State Health Officer, Dr. Laughinghouse is the fourth to hold the position as executive officer of a State department now in its fiftieth year, the State Board of Health having been created by legislative act in 1877. The first secretary, Dr. Thomas Fanning Wood, served fifteen years. The second, Dr. Richard Henry Lewis, served seventeen years. The third, Dr. Watson Smith Rankin, served sixteen years.

The secretary of the Board is by virtue of his office, the State Health Officer. He is elected by the Board for a term of six years. The duties of the office require that this official should be a man of technical training and experience, and, therefore, should be

selected on account of his technical rather than of his political qualifications. It is, therefore, right that he should be selected by a specially qualified committee, that is, the State Board of Health, and not be elected in a general election, as would be the case if the office were a political one. The six year term of office is in accordance with the idea of permanency of policies. The law requires that the Secretary, and State Health Officer, shall be a registered physician in the State, and that he shall not engage in private practice, but devote his time and energy to the work of the Board.

The work of the State Board of Health is large and varied. For efficiency of administration, this work is apportioned among a number of bureaus or special divisions, each directed by an administrative head chosen for his special training and ability. These bureaus in the present organization of the Board consist of the following: the State Laboratory of Hygiene, to examine water and diagnostic specimens, and to produce and distribute biological products, vaccines and sera; the Bureau of Vital Statistics, to secure, correct, tabulate, and publish information as to distribution and causes of death, and as to distribution of births, and to secure reports of communicable diseases and epidemics; the Bureau of Medical Inspection of Schools, to develop interest in the health of school children as it is related to their education, and to stimulate more adequate treatment for their most common defects; the Bureau of County Health Work, to interest county authorities in providing efficient county health departments, and to advise with, correlate, and assist such county departments now totaling 37; the Bureau of Maternity and Infancy, to develop a higher degree of public intelligence regarding the importance and the care of the problems of maternity and infancy; the Bureau of Sanitary Engineering and Inspection, to exercise supervision over the construction and maintenance of public water supplies and sewerage, to inspect and enforce sanitary conditions of privies, jails, convict camps, hotels, and public institutions; the Bureau of Health Education, to prepare and publish educational

material and direct the mobile visual education unit.

The correlation of the work of the several bureaus, to insure a harmonious and efficient administration of the work of the Board, is through the supervision and direction of the executive officer of the Board. There are naturally many problems and duties which cannot be assigned to any of the special bureaus, which by their nature must be under the immediate direction of the secretary. These may be briefly stated as follows: (1) to assume primary responsibility for the enforcement of the more important State health laws; (2) to consider and determine, with the advice and consent of the Board, what should be the more important public health policies of the State; (3) to secure the needed legislation that will make possible the adoption of desirable health policies; (4) to supervise and assist in the execution of established policies.

The enforcement of law rests, in a general way and broadly upon the judicial machinery of the State. On the other hand, it is not only the privilege but the duty of any citizen to see that the violation of any law is brought to the attention of the courts and dealt with. The more thorough understanding of the purposes and the character of the public health laws and the keener appreciation of their importance imposes in a special way upon the executive officer of the Board of Health, the duty of seeing that these particular laws are complied with.

The duty of considering and formulating for the action of the Board what should be the more important public health policies of the State rests largely with the executive officer of the Board on account of its primary and general responsibility for the development of an effective program of human conservation.

After the Board has considered and definitely decided upon a course of action it becomes the duty of the executive officer to bring to the attention of the people generally the need of the course of action approved by the Board, and to so inform, interest, and appeal to the public, and reflexively and directly to the General Assembly as to secure legislative approval and provision

for the public health policies which have been adopted by the Board.

The efficiency of any agency is largely conditional upon the personnel employed in its activities. The responsibility of finding and securing persons properly qualified by native endowments; training and experience to direct the special bureaus or divisions entrusted with carrying out the established policies of the Board rests largely upon the executive officer.

As has been pointed out heretofore, the organization of the work of the Board embraces a number of special bureaus which are held responsible for some definite state health policy, and which are so organized as to be largely independent of each other. Naturally, these bureaus or divisions in the character of their work are closely related and some means of coördinating their activities is necessary. This means is supplied by the executive officer.

The majority of the calls by letter or person upon the Board for service or information can be and are referred to the special bureau of the Board concerned directly with the kind of service or information desired. However, there are a large number of such calls that are general in character and which of necessity must be handled by the executive officer.

The interest and support of the people in public health is in proportion to their understanding of the problem. To reach people, therefore, with information as to what the public needs of the State are and how the Board purposes to meet the needs is, of all the Board's duties, the most fundamental and the most important. Moreover, the educational work of the Board is of a general nature, dealing with the interests of all the bureaus or special divisions and, therefore, belongs largely to the executive officer.

The duty of receiving, disbursing and accounting for the public moneys provided for the work of the Board is a duty that rests primarily upon the executive officer.

The appropriation by the General Assembly for the work of the Board for the current fiscal year is \$425,000. An additional sum of approximately \$50,000 is secured from other sources. The organized county health departments and city health departments of the State have budgets exceeding \$600,000 annually. Altogether, the expenditures in the State annually for public health exceeds \$1,000,000. That these expenditures shall be made wisely, and adequate returns obtained, is primarily the responsibility of the executive officer of the Board.

HOPE

"Hope springs eternal in the human breast."—(Pope.)

"I live on hope and what I think do all who come into this world."—(Bridges.)

"Is there no hope? the sick man said;
The silent doctor shook his head."—(Gay.)

That prince of men;—that inimitable physician-writer, Oliver Wendell Holmes, has said "a physician is not, at least ought not to be, an executioner, and a sentence of death on his face is as bad as a warrant of execution signed by the governor."

A prominent physician recently said to an audience of doctors: "In the treatment of disease, we constantly employ suggestion, though perhaps we hardly realize that fact. Suggestion is in every bottle of medicine we prescribe and in every remedy we use if these are to be of any help. Possibly it is for this very reason that we are unable to treat properly our own relations, for to them

we are 'prophet without honor' and our treatment lacks the power of suggestion. In illness, suggestibility is raised to its highest power, and a multiple factor has to be especially allowed for, since in extreme cases a word or a look on our part may turn the scales against our patient. This brings us to that difficult question with which we are often faced, namely, how much of the truth, as we understand it, should we tell the patient? Friends are entitled to the whole truth and should have it, but for the patient himself, our duty is not so clear. I think as a general rule that we should, as long as possible, encourage the hope of recovery, even if we feel little or none of that hope ourselves."

A smiling, cheerful, optimistic, but genuinely interested visitor probably never did the sickest patient any harm.

The long faced pessimist dealing out gobs of sob stuff can, and does, upset even the trivially ill patient and turn his trivial complaint to serious illness. It is the prevalence of this latter class that prompts the conscientious doctor to post the sign "No visitors allowed." To be sure the ill patient who needs every ounce of vital energy to combat disease should not be disturbed when rest is needed. Hence, even the cheerful, although silent, visitor needs use discretion as to when he enters and how long he stays.

The real doctor, nurse or friend, must make his face a smiling sphinx in the presence of any emotion.

These conclusions are not theory but they are long noted observations for which there is a reason.

The patient about to die but determined not to die until a loved one comes is proof of the power of mind over the body.

The emotions do have powerful influence over health. Who is there who does not know from personal experience that he cannot swallow food, nor digest it if he could, when overwhelmed with grief. Sorrow, anger, worry, anticipation, take the appetite because they paralyze the activity of the glands

which secrete digestive juices. But these glands are by no means all, for other glands of internal secretion,—the endocrine glands,—are influenced by emotion.

Violent effort requires the use of much energy. Sugar is a source of energy. Adrenalin which is a secretion of the adrenal glands causes both a constriction of the (especially smaller) blood vessels greatly raising the blood pressure and it increases the sugar content of the blood. It has been clearly proven that anger stimulates the adrenal glands to secrete an abundance of adrenalin, therefore anger actually automatically increases blood pressure and supplies energy which is a natural preparation for conflict needing violent action. Under the influence of violent anger physical feats are accomplished which would be impossible during sober moments.

Likewise, other glands of internal secretion control other body functions and the activity of these glands are controlled by the state of mind.

Many lives have most certainly been saved because those about them have not by word, deed, or look, permitted the loss of hope.

"CHILDREN WILL BE CHILDREN"

A child is not merely a miniature adult. The difference is far more than a difference in size and weight. Neither mentally nor physically can children be measured by adult standards. If measurement by such standards is attempted, woefully erroneous results are sure to follow.

There is, in nearly all cases, a kernel of truth in the accusation by children that their parents or teachers or elders do not understand them. We do not understand children because we try to measure them by our own adult standards. This is not by any means saying that we have forgotten that we, too, were once children for when we were children we were then measuring older folks by children's standards and the change in our standards was as insidious as our own physical growth was to us, hence we fail to recognize that there has been a change and we

think we still see our children through children's eyes.

There is a marked difference between children and adults in their anatomy and physiology, as well as their psychology. The soft bones and cartilage of children is one difference, and of itself explains why acute bronchitis is a dreaded disease in children, and yet is not generally to be dreaded in adults.

The meat of a young animal or chicken is tender, while that of an old animal is tough. The breast bone of an old chicken is hard to the tip, while the breast bone of a young chicken has cartilage on the tip. The older the chicken the less cartilage there is. The bronchi—the wind pipe—is held from collapsing by rings of cartilage.

In the child the cartilaginous walls of the bronchi are still soft and vascular. Because of this condition, an acute bronchitis in children is an intensely

localized infection involving the cartilaginous walls and which, beside the systemic toxemia, produces great edema (swelling of the walls) causing difficult breathing or smothering.

Furthermore, in children the alveolar sacs of the lungs have not yet fully expanded, many of them not at all, hence there is much less reserve breathing space in the child lung, and when a part of this is incapacitated by disease, there is obviously much more air hunger than in the adult who could still breathe fairly well with one-half the expanded air sacs incapacitated by disease.

Pneumonia in children causes very rapid and difficult breathing, and violent systemic toxemia, while there is relative absence of the typical pleuritic pain, and it is often very difficult to locate in the child lung any typical localization. Pneumonia, as well as acute bronchitis, shows a very different disease picture in children from adults. Effective treatment, too, is as different as the disease picture.

This same phenomena of unhardened bone is certainly a factor which causes children to be much more susceptible than adults to bone tuberculosis—"white swelling" "hip joint disease" "hunch back." Perhaps it is not a matter of coincidence that pulmonary tuberculosis,—consumption—gets a foothold in more people during that age of late immaturity and early maturity, which is just when the alveolar sacs in the lungs are becoming fully expanded and before the cartilaginous walls of the smaller bronchi and alveole have lost their soft and vascular condition. It is at least a commonly recognized fact that humanity is more vulnerable to pulmonary tuberculosis during the age from 15 to 25.

In the lower forms of life the heart is less dependent on cerebral control. In the frog, for instance, the heart may be entirely removed from the body and yet it will continue, if floating in the proper solution, to contract for many minutes, even hours.

The infant heart is likewise less dependent on cerebral control, although at the time of birth not to the extent of being able to function if separated from the central nervous system, but

for several months after birth there is very little inhibition from the brain.

The brain of an infant is much heavier in proportion to the rest of the body than the brain of an adult, but, even so, the central nervous system of children is still undeveloped and very imperfect, hence as the heart of a child loses its power of vegetative or automatic function, and comes more and more under cerebral control, the rate of contractions decreases from the infant rate of 150 per minute to half that number, but these contractions are much more irregular. Not until the cerebro-spinal system has reached mature development does the heart again attain its proper rhythm and speed. The infant heart is rapid but regular, the childhood heart is slow and unstable, the normal adult heart is slightly more rapid and constantly regular.

The infant heart, too, is relatively large in proportion to the rest of the body, but its growth and development is slow. At about six years of age the general body growth begins to exceed the growth of the heart, and from about six years to sixteen the heart is relatively small in proportion to the rest of the body. After this, body growth slackens while the heart continues its development, and at about the age of twenty-five normal proportion is reached and the individual is in the peak of physical perfection.

It is during the age from six to sixteen, when the heart is relatively small and carrying its heaviest load, that it is most liable to injury from disease or overwork. It is especially during this age when supreme carefulness is needed. The toxins of any infectious disease, more particularly the so-called children's diseases and infections as of tonsils, teeth and sinuses, are very destructive of endothelial tissue lining the heart, the blood vessels and the joint cavities. During the febrile stage of these diseases, scarlet fever or measles for instance, the child feels badly enough not to want to be very active but so soon as this stage passes the child wants to be up and about. Unfortunately, during this period of convalescence the toxins of disease have not been eradicated and they continue to affect these deli-

cate endothelial cells. If then, during this dangerous period, an extra load is added to the heart by physical exertion it is very easy for irreparable damage to be done. Right here is the cause, and the beginning, of many heart conditions that later in middle life cause invalidism and death. Of all times during an attack of any infectious disease, and especially in children, when the most careful medical attention is needed it is during the period of convalescence, and after it is commonly thought that all danger is past. After every infectious disease there should be frequent and thorough examination to know just what and how much that weakened heart can stand.

In acute abdominal diseases there is much difference between child and adult. Acetonemia (the presence of acetone bodies in the blood) is a condition peculiarly belonging to children between the ages of three and six years. With it there is sudden severe pain and vomiting and fever. Our grandmothers (some of them still living) were addicted to calling this condition "biliousness." The child is exhausted, pale and shrunken, with lethargy, sleeplessness, coma and not infrequently delirium and convulsions. The nervous symptoms are in all cases prominent. The tongue is coated and there is a peculiar and characteristic odor (of acetone) of the breath. This condition is often difficult to differentiate from appendicitis.

In appendicitis in children, by the way, there is often a history of a preceding infection, frequently of the tonsils. In children it is much easier to feel an inflamed or diseased appendix than it is in the case of adults. To properly accomplish this, however, requires much time and patience. As the doctor sits down beside the patient with the flat palm of his warm hand very gently resting over the area, it very often takes fully fifteen minutes before the child gets confidence and allows the abdominal muscles to completely relax. This time is not wasted but is well spent, although the doctor may run the risk of incurring the displeasure of an impatient mother when she sees him sitting apparently idle, talking of irrelevant things while

she thinks, and sometimes says, "why don't he do something?" Vomiting in children with appendicitis is almost invariable. Here there is a marked difference. In children there is seldom nausea; they just vomit. Persistent vomiting in appendicitis of children indicates a distention of the appendix and suggests the possibility of an early rupture. The fever in children with this disease is usually higher than in adults.

All fevers in children are higher than in adults. The heat regulating center has not yet become thoroughly established, and, like the general nervous system, is quite sensitive to any form of stimulation. High fever in children very often justifies less apprehension than a seemingly trivial temperature in an adult. In the aged, a fatal pneumonia may never show a temperature higher than 100 degrees, while a child with an intestinal upset may show a temperature of 105 degrees and in a few hours be normal and playing.

In the so-called nervous or emotional child these quick changes are more noticeable, but all children are much less stable than are adults. Nervous children exhibit quick changes of color in face and lips, palpitation, rapid heart, diarrhea, constipation and variously situated pains. Taste, hearing, sight, smell and touch, the five cardinal senses, are all exaggerated and hence the nervous child reacts violently to all stimuli and exhibits extreme likes and dislikes. Depending on whether the nervous child is restrained or unrestrained, he will develop into one of two distinct adult types. The relative merits of restraint and unrestraint are not, however, a matter for present discussion. Every nervous child deserves the most careful study and consideration to the end, that this disability may be as nearly overcome as possible.

There is probably no greater source of trial to the physician than the nervous child in sickness. The unrestrained, nervous child is a particular problem, if parents have used the doctor as a bugaboo to frighten the child into obedience.

"As the twig is bent so the tree is inclined," is a saying with which fa-

miliarity should not breed contempt. It is a saying which should be burned indelibly into the consciousness of every parent and teacher. Children do inherit certain physical characteristics. The Ethiopian cannot change his color, nor can the leopard change his spots, but the environment of children goes

a long way toward making them what they come to be.

A better understanding of the fundamental differences between children and adults, and a realization of the fact that children must learn adult ways before they can become adults, will be a big step forward.

INSANITY AND FEEBLEMINDEDNESS

A recent issue of the *Mental Hygiene Bulletin* calls attention to several outstanding misconceptions regarding insanity which should be corrected. These misconceptions, which are quoted later in this article, form a very serious obstacle in the treatment and alleviation of mental upsets, just as ignorance regarding infections is a serious obstacle in the treatment of all the common contagious diseases. These diseases are being conquered by increasing knowledge of their cause and the manner in which they are spread.

For some reason the public knowledge regarding the so-called mental diseases has not made the same progress as has been made in other lines and as regards mental disease, we are today in the same relative stage of information as we were years ago regarding the common infectious diseases.

Mentality is not a tangible thing that can be dissected or isolated. It is the outward manifestation of the function of the central nervous system just as strength is the outward manifestation of the function of muscles. All living things have strength and the degree of strength is designated by the words strong or weak. These, of course, are only relative terms, for the weak man might indeed be much stronger than the strong baby.

Insanity and sanity are likewise only loosely applied terms designating relative degrees of mentality. The so-called insane adult may possess much more mental ability than the so-called sane baby.

The faculty of sight and hearing may be hard to understand. But sight which enables the person to recognize objects at a distance is a function of special organs and nerves. When there is a disturbance or an injury to these

organs or nerves, the power to see is destroyed.

Mentality is a function of the central nervous system and is a composite of the abilities to perceive, remember, measure values and direct muscular activity. Any disturbance or injury of the central nervous system will disturb the function of this system with a corresponding disturbance of mentality.

We inherit from forbears certain physical characteristics which include blue eyes, black hair or a big nose. Some persons inherit a physique or constitution which permits them to be more susceptible to a specific disease than other persons. There are those who naturally have a weak abdominal wall and such person is more likely to suffer a rupture or hernia than one whose abdominal wall is normally strong.

In exactly the same way we inherit a central nervous system each with its own limit of capacity. In this way and only to this extent sanity or insanity may be inherited. We inherit the structure which produces function but we do not inherit the function. Function may be cultivated to any degree within the limits of the capacity of the structure. Musicians may be born but the degree of musical skill within the limits of capacity is determined by cultivation. Inherited physical handicaps set a limit to physical strength but physical strength may be greatly increased by cultivation.

It is actually very difficult to say just what is the limit of capacity because very few persons have ever developed any talent to the limit of physical capacity. It is obvious, then, that if mentality is a function of the central nervous system it is clearly dependent on the integrity of the cen-

tral nervous system and the development by training of structure producing this function.

The point which it is most important to clarify is that there is nothing more mysterious or supernatural about mental disease than there is about disease or ailment of any other part of the human body. The so-called mental diseases are subject to and amenable to the same governing laws of nature that control all disease.

Oddities and peculiar mental traits are not, strictly speaking, a disease, but are the result of habits and environment just as one develops a characteristic mannerism or as stammering is a habit.

The second fundamental point to keep clearly in mind is that feeble-mindedness and insanity are absolutely separate and distinct. Feeble-mindedness is a lack of mental development which is occasioned by physically limited mental capacity. The feeble-minded person is a mental dwarf just as Tom Thumb was a physical dwarf. The insane person is one with a normal capacity fundamentally but whose mentality has been disturbed by diseased or injured central nervous system structure. The disease may be by infection and the injury by emotional shock or environment.

Mental Hygiene Bulletin, from which the following is quoted, gives ten misconceptions concerning mental deficiency which still linger, and opposite each it states what science is teaching today:

1. Misconception:

That feeble-mindedness is a mental disease.

Today's teaching:

That feeble-mindedness is an arrest of intellectual growth in the early developmental life of the individual.

2. Misconception:

That feeble-mindedness can be cured like mental disease.

Today's teaching:

That true feeble-mindedness is an organic condition involving a lack of development of brain tissue and cannot be cured in a medical sense.

3. Misconception:

That feeble-mindedness is always hereditary.

Today's teaching:

That many of the feeble-minded, estimated as approximately half, owe their mental defect to accidental causes, such as prenatal neglect, injuries at birth, and early childhood diseases like scarlet fever, infantile paralysis, and "sleeping sickness."

4. Misconception:

That sterilization is the best solution of the problems of the feeble-minded.

Today's teaching:

That sterilization will not solve the problem because feeble-mindedness is not always due to a defective germ plasm, and because in our present state of knowledge about the laws of heredity we cannot say how much or when feeble-mindedness is transmissible.

5. Misconception:

That the feeble-minded are all a menace to society.

Today's teaching:

That the feeble-minded are not necessarily delinquent or criminally-minded *per se*, and that their occasional danger to society depends upon other factors besides their mental defect. There are good feeble-minded as well as bad feeble-minded.

6. Misconception:

That segregation in institutions is the only way to control the feeble-minded.

Today's teaching:

That segregation is necessary only for the low grades of feeble-minded and for the relatively few defective delinquents, or the incorrigibly bad feeble-minded, for whom little can be done in school or at home.

7. Misconception:

That the feeble-minded are a total loss to society.

Today's teaching:

That most of the feeble-minded, if taken early, can be trained to do productive manual work, and with understanding, guidance, and supervision can lead happy, useful and social lives.

8. Misconception:

That the feeble-minded are not teachable at school.

Today's teaching:

That their intellectual capacities are too limited to profit from the ordinary school curriculum, but that they can be taught a trade in the special classes which are being provided in increasing numbers in the public schools.

9. Misconception:

That the feeble-minded are all equally mentally defective.

Today's teaching:

That there is a gradual curve from the extreme condition of the idiot, whose "mental age" is one or two years, to the moron and borderline cases, in which the "mental age" ranges from eight years to normal.

10. Misconception:

That the feeble-minded are readily recognizable.

Today's teaching:

That the diagnosis of feeble-mindedness is frequently a difficult matter, even when the intelligence test is administered by an expert psychologist, and that the psychiatrist must often be called in to eliminate various causes of remedial mental backwardness before a condition of true mental defect is established.

Then About So-called Insanity—**1. Misconception:**

That insanity comes suddenly.

Today's teaching:

That insanity develops gradually over shorter or longer periods of time.

2. Misconception:

That once insane always insane.

Today's teaching:

That many of the insane are restored to health after a period of hospital treatment.

3. Misconception:

That insanity is a disgrace.

Today's teaching:

That insanity is a condition no more to be ashamed of than pneumonia or a broken limb.

4. Misconception:

That insanity is an unfortunate visitation to be regarded with resignation and fatalism.

Today's teaching:

That insanity is mental disease and should receive medical attention, just as tuberculosis, cancer or other physical conditions.

5. Misconception:

That mental disease is incurable.

Today's teaching:

That many persons with mental disease are being cured today and restored to health and normality.

6. Misconception:

That asylums for the insane are dreadful places and that admission to them rings down the curtain on the lives of the victims.

Today's teaching:

That our asylums are being turned into hospitals in which the insane receive medical care and treatment, and from which between 25 and 40 per cent are discharged recovered or improved.

7. Misconception:

That emotional shock, the loss of dear ones, disappointment in love, economic loss, and other human misfortunes cause insanity.

Today's teaching:

That personal misfortunes and tragedies are frequently the precipitating causes of insanity, but that the accumulation of a variety of factors inherent in the progressive life experience of the individual is really responsible for unsettling mental balance and bringing on mental breakdowns.

8. Misconception:

That insanity is a specific disease entity.

Today's teaching:

That "insanity" is a convenient term used by the courts to denote irresponsibility in the eyes of the law, and that there are many different kinds of mental disorder just as there are many kinds of physical disorders.

9. Misconception:

That nobody can guard against mental disease.

Today's teaching:

That there are usually danger signals and symptoms of an approaching breakdown that can be recognized and medically dealt with.

10. Misconception:

That a person is either sane or insane.

Today's teaching:

That there are different degrees of mental health, just as there are varying degrees of physical health.

11. Misconception:

That "nervous breakdown" is a disease of the nerves.

Today's teaching:

That "nervous breakdown" is in reality a mental condition in which there is seldom anything organically wrong with the nervous system.

MENTAL HYGIENE OF CHILDHOOD

A RADIO TALK

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The ideal of medicine for many hundreds of years was to cure the ill, but with the continuous picture before it of patients who could not be cured, and with the accumulation of knowledge of the causes of disease, this idea in recent years has changed, so that the ideal of medicine today is the prevention of illness.

The department of medicine that deals with mental illnesses has gone through this same process of evolution, and the mental-hygiene movement, which is less than twenty years old, incorporates this ideal. The history of this movement has been exceedingly interesting and illuminating. It began with the mentally-ill adult, and in its endeavors to find the causes that led to his illness it started a search which led backward through the life of the patient to his experiences in his college days, during his adolescence, during

his early school days, and finally to the circumstances and conditions that surrounded him in his earliest years in the family. The result has been that we who deal with mental disorders have come finally to the general conclusion that for the most part all this group of illnesses, when they come to be recognized in adults, have a long history of preparation extending back to the childhood of the individual. So we have come finally to search among the circumstances that surrounded the child and influenced his ways of thinking and feeling, for the ultimate factors which have finally blossomed forth in the full-blown illness of later life.

While this conclusion seems to make the problem of the cure of mental illness an exceedingly difficult one, and from that point of view may seem to be discouraging, on the other hand it makes the problem of prevention much

more tangible and hopeful; for, from our experience we know that if anything goes wrong in the mental life it is susceptible of modification and readjustment in direct proportion to the youth of the individual. In other words, the earlier that deviations from healthy ways of thinking and feeling can be reached after they have begun to manifest themselves, the greater the hope is of modifying them and bringing them in line with accepted standards. From this point of view, therefore, mental hygiene must have its beginnings in the family, for it needs to be recognized that it is in the family setting that the child begins to experiment with the world into which he has been born, and that the future of his life will depend upon how successful these early experiments have been. In other words, the pattern, according to which he is ever after going to deal with the world of reality about him, is laid down in its foundations during these early years.

It is, therefore, of the utmost importance that the people who surround the child—his parents, his brothers and sisters, and other relatives, and the teachers of his early days—should be individuals who are worthy objects of his imitation and emulation. We feel very strongly that early indications of irritability, suspicion, cruelty, jealousy, timidity, and a thousand other crippling character-trait are the result of circumstances in his environment, for the most part the attitudes of the people about him, that condition responses of this sort, which in their later developments are capable of being so crippling to the personality as to ultimately manifest themselves in definite mental disease that may in the last analysis result in the individual's being a patient in a mental hospital, or because of antisocial tendencies coming to grips with the law and finding himself sentenced to prison.

Childhood is, therefore, the golden period for mental hygiene, for laying down wisely and substantially those traits of character in the foundations of the personality that will continue to function efficiently in later life. This is an entirely different point of view from the fatalistic attitude that everything the child manifests in the early

years of life is due to heredity. From this point of view nothing can be changed, while from the mental-hygiene point of view children come into the world equipped with all sorts of possibilities, which possibilities, however, may be turned in this or that direction, depending upon the influences that originally surround them.

Next to the family in importance for the future mental health of the child is the school, especially during the early years. This fact is being more and more appreciated by those who are giving their attention to the problems of education. All over the world today there are innumerable experiments being tried out in schools, with the object of learning how best to assist in the unfolding of the mental powers of the child. The objective of education has changed from an attempt to see how many concrete facts can be crammed into a given individual in a given length of time to an attempt to understand the process of the unfolding and blossoming of the child's personality and to assist this process to the best advantage, hindering it, thwarting, or side-tracking it as little as possible. The mental-hygiene movement, starting as I said with adults, has gradually worked its way backward into the universities, where courses in mental hygiene are now being established; still further backward into the public schools, where physicians acquainted with the principles of mental hygiene are being more and more frequently sought; backward to the earlier ages into the primary schools, where the whole subject of the problems of education are being overhauled; and finally into the family; and, incidentally on the way, into the juvenile courts, where the problems of juvenile delinquency are now being considered as deviations from the standards of mental health and where every effort is being made to salvage those children who have begun to show symptoms of being on the path that leads to their own destruction. A vital, widespread recognition that deviations in ways of thinking and feeling and acting that place the individual at a serious disadvantage, that result in his unhappiness and suffering, and not infrequently in conduct that is either

antisocial or asocial, are all manifestations of mental disorder and should be dealt with from the point of view of medicine as illnesses to be cured, or better, prevented, will create the demand for physicians who are equipped with this knowledge, and will hasten materially the day when we can look forward to as much material improvement in the realm of mental health as we have learned to expect in the realm of physical health from the other departments of medicine.

Three principles stand out in high relief in this whole matter of the mental hygiene of childhood:

1. The child is not simply a small adult, but has a personality all his own and lives in a world quite different from that of the adult, to which, therefore, adult standards cannot be indiscriminately applied. He has an appreciation and understanding of that which goes on about him, which, while it is quite different from the adult understanding, is, nevertheless, much keener and truer to fact than the adult usually appreciates. The child, therefore, should be protected from all situations that might have a deleterious influence, and adults should never assume that what is said or what is done before him is not grasped because the child is too young to understand. Dis-

harmonies of all sorts in the family are pretty apt ultimately to find their reflection in the child. Parents, therefore, should strive to be worthy objectives of love and emulation.

2. It follows from this that education should never be pursued with the object of pressing the child into some mold approved by the adult. Each child is an individuality with his own possibilities, which are unique. The process of education should have as its object to find the best way to assist the child in the unfolding of these possibilities.

3. Such symptoms as fear, timidity, stubbornness, inability to learn, or such disorders of conduct as lying, stealing, cruelty, or various bad habits, need to be understood. It is only through their understanding that they can be corrected.

Punishment, particularly whipping, is only too frequently an exhibition of temper or the result of a feeling of frustration on the part of the parent, and its tendency is more apt to be in the direction of putting a premium upon deceit, and further operating to distort the personality than to correct these difficulties.

The whole tendency of the modern psychology of childhood moves in these directions.

POPULARIZING MEDICAL KNOWLEDGE (THE NATION'S HEALTH)

During the last few years a great deal has been written for the general public about the value of health and how to keep well. Such information is not confined to special health publications, but is quite general in the daily press. There is hardly a big newspaper today that does not have its health editor and health column, in which it undertakes to give more or less information to its readers on how to avoid illness, or what to do to regain strength and well being.

Certainly there is now no secrecy, nor should there be, about diseases, how they spread, how they may be avoided, and how persons who are below par physically may improve their condition.

All of the factors are present to make health education necessary at this time.

Many facts regarding the methods of spread of communicable diseases have been discovered. All reputable newspapers have purged their columns of nostrum advertising and are ready to print articles relating to the prevention of disease and the promotion of health. Numerous men and women have developed the faculty of translating scientific research information into a vocabulary and style of interest to the average non-medical reader.

But newspaper items telling how to treat diseases do more harm than good. Physicians do not treat diseases, they treat persons who have diseases, and this cannot be done by mail or the printed word. There must be a personal contact between the patient and his physician.

Health articles for current lay periodicals should discuss measures for avoiding diseases, building healthy bodies and sound minds, and should stress the importance of prompt correction of minor physical defects of all sorts, including attention to the teeth. Such articles should also emphasize the value of the annual physical examination of apparently well persons in arresting degenerative diseases in their incipient stages. This question of the annual physical examination is an important and rapidly developing phase of medicine. No measure can accomplish more toward prolonging human life and making these lives more efficient and satisfying than the custom of a complete examination of each individual on his birthday anniversary.

The problem now confronting the lay press of our country is not only to give the public the facts about disease causes and health preservation, but also to see that health publicity is given from an unbiased and accurate viewpoint. Newspapers and magazines are helping the general public to acquire authentic information regarding hygiene, sanitation, and health conservation; and how to prevent disease and promote health and longevity. Such being their intention, the press should see to it that the right sort of health articles—those that tell the truth—reach the reading public.

Health officers, and the executives of national and local public health organizations have produced an immense volume of useful health literature for the general public. It is the business of health officers and health societies to give publicity to their work, not as ordinary publicity for self-advertisement, but to inform the public in order to obtain their intelligent coöperation in the promotion of public health work. Health officers and health agencies are not handicapped by any aversion to publicity as are most physicians, who confuse legitimate health education with advertising. Doctors should not advertise their personal professional ability, but they should help people to ways of better living, by giving reliable health information to newspaper readers. If revision of the medical code of ethics is needed to make this possible, by all means let it be done.

As physicians and surgeons are in close contact with persons needing this sort of information, it is fitting that health education should be in their hands.

In their daily contact with patients a considerable amount of detailed instruction to the patient should be given to supplement the medical or surgical treatment. In giving such advice it is not sufficient for the doctor merely to mention what should be done by the patient. The reasons for the suggestions made should be fully explained. It is the neglect of just this sort of instruction and the treating of sick people in an impersonal way by the physician, that has caused many to seek the help of cultists who make a specialty of "explaining" to their patients the cause of the trouble and how the complaint can be remedied. The fact that such "explanations" are based upon a faulty premise is, of course, not recognized by those who believe they have been benefited by such treatment. Much of the success of cults is due to the advice they give their clients for the regulation of diet, out-door exercise, drinking plenty of water, proper hours of sleep, avoidance of mental and physical fatigue, and similar auxiliaries to the manipulative procedure practiced by them.

A physician can develop no better way of giving a non-technical explanation of some medical problem with detailed instructions to his patient than by preparing an article on the subject for the daily press of his community.

When the private practitioners of the United States more fully realize their opportunity for rendering service through legitimate publicity, the value of health educational material will be greatly increased. State and local medical societies should coöperate with their constituent members in the production of health articles for the public press of their respective communities. Such participation by physicians, as individuals, and the medical society as an organization, would stimulate the development of valuable information, expressed in common words for newspaper readers. This sort of activity by the profession will result in their becoming what their title indicates—teachers.

LOBAR PNEUMONIA

WHAT WE KNOW ABOUT ITS SOURCES AND MODES OF SPREAD

By REGINALD M. ATWATER, M.D., Dr.P.H.

It is now 45 years since Sternberg and Pasteur first described the pneumococcus and 40 years since Frankel and Weichselbaum in 1886 proved that the pneumococcus is the cause of the disease pneumonia. It would therefore seem profitable at this time to review our present knowledge of this important disease which has been responsible for about 10 per cent of all deaths in the United States.

There are two incidents in this story of pneumonia which are almost as important as the discoveries already mentioned. These are the studies of Neufeld and Haendel in 1910, and those by several workers at the Rockefeller Institute within the past 15 years. Through these advances we have come to understand that we are dealing in the pneumococci not with a single organism but with a group of organisms, among which there are morphological resemblances and immunological differences of strains. These parasites are now known to be widely scattered among healthy persons in all walks of life, and their prevalence in the nose and throat is much more widespread than the disease itself. This fact is true both for the common and relatively avirulent Type IV as well as for the less common but more virulent fixed types. In pneumonia as in certain other diseases which spread through the respiratory secretions, the parasite occurs in more persons than the disease and the cases are limited by the immunity of man rather than by the distribution of the causative agent.

In speaking of pneumonia, therefore, we must realize that several organisms may be the responsible agents. Those causing clear-cut lobar pneumonia are, in more than 90 per cent of the cases, of the pneumococcus group, though this form of the disease may sometimes be caused by Friedlander's bacillus, streptococci or other bacteria. The disease pneumonia itself is a group of several pathologic forms and thus the confusion of separate organisms is made the greater by this added complexity in

classification of the disease process. The early work which demonstrated the ubiquity of pneumococci in the mouths and throats of healthy persons made the conclusion very natural that these commonly present forms were able to produce the disease whenever resistance fell below a protecting level. The later work which described the types and their different disease-producing powers made it clear that most lobar pneumonia is caused by fixed type pneumococci which are not found with great frequency in the general population. A case of pneumonia was thus shown to be caused by pneumococci of special virulence and the conclusion was easily reached that such a case depended on infection with a particular pneumococcus which had come rather directly from a case.

From the table herewith, however, it will be seen that the types I, II and III which together produce about 75% of the lobar pneumonia are not uncommon among healthy persons. Recent Boston studies have proved that half of a group of normal persons carried fixed type pneumococci at some time during a test period of six months. Therefore it now appears that most persons—if not all—become carriers of fixed type pneumococci during the course of a year and that the development of the disease pneumonia depends on a combination of infection with a disease-producing pneumococcus and a state of susceptibility on the part of the man who carries this pneumococcus.

Pneumococci and the Disease Pneumonia

(These figures are a composite of the examination of healthy persons made in New York and Boston and of the findings in cases of pneumonia by the workers at the Rockefeller Institute.)

Type of Pneumo-coccus	Per cent of Carriers in General Population	Per cent of all Pneumococcus Lobar Pneumonia	Case Fatality (i.e., numbers of deaths per hundred cases)
I	1.8%	33%	23%
II	5.1%	31%	32%
III	8.4%	12%	45%
IV	41.8%	24%	16%

It is known definitely that persons in the families with cases of pneumonia and exposed hospital and medical attendants are more frequently carriers of the fixed type pneumococci than persons not so exposed. Pneumonia cases are therefore sources of infection for carriers.

Most of these persons who pick up the virulent type organisms are immune to the disease and painstaking search of the contacts of these carriers for new cases of pneumonia is usually futile. That is to say that cases of lobar pneumonia which give a history of association with a previous case or with a known carrier are rare. The hidden channels of spread are much more numerous than those which we can identify. One case of smallpox is usually directly related to a previous case; not so with pneumonia. The number of cases of lobar pneumonia in American cities does not go above one per hundred living in one year and, if we assume that all persons meet these organisms at frequent intervals, we can explain the small number of actual cases only by acknowledging that the immunity possessed by most people is of sufficient degree. This resistance may presumably be reduced by fatigue, exposure, alcohol, irritating dusts, other diseases, etc.—the so-called predisposing causes of pneumonia, most of which are preventable.

The actual means of spread of pneumonia are thus in all probability contact between persons and which contact is usually of the more direct variety. This may involve direct relationship with a case of pneumonia, but is more likely to be the result of organisms acquired from healthy persons. Hence the desirability of suppressing the scattering of nose and throat secretions of both the sick and the well. Measures directed against spitting, unguarded sneezing and coughing, unclean dishes, towels and food, and against smearing of secretions on hands and from them to door knobs, utensils of all sorts, stair rails, etc.—all of these measures are indicated and offer more promise of success than the other means at our disposal.

Because of the known frequency of fixed type pneumococci in the popula-

tion at large, the isolation of cases of pneumonia could not be expected to be more than partially effective in controlling the disease, although if effectively done it should decrease the number of carriers.

The prevention of pneumonia by vaccines has been tried in several well-controlled instances, but the results do not encourage us to employ this method at present. Treatment of known cases of Type I pneumonia with Type I serum is a beneficial method. Sera for other types and purified antibody solutions offer prospects of success. Studies of extensive series of cases have shown that it is not advisable to treat all pneumonia with serum of one or several types in the hope that sometime, somehow it may be of benefit to the patient. Shotgun therapy is again cast into the discard in favor of the high-powered rifle of specific treatment which, when it does strike the mark, does the work effectively. Curative serum must be matched against the corresponding form of the disease in order to be of any benefit.

Pneumonia in all its forms in 1922 caused 2,331 deaths in North Carolina. This was at the rate of 88 per 100,000 population and represents 7.6% of all deaths, so that efforts directed toward finding the sources and modes of infection are quite in order. It would be gratifying to say that there is much promise in future discoveries, but the fact is that we have in pneumonia a major cause of death which we cannot now control by our hygienic knowledge and, though we have been at the problem a good while, we have not solved it yet. More light and clearer insight are greatly needed that

"Health may be more perfect,
Life more vigorous,
Disease less frequent,
Decay less rapid
And Death more remote."

Reporter: "I know a man, married for thirty years, who stays at home every night."

M. Hahn (with feeling): "Oh! that IS LOVE."

Reporter: "Oh, no, it's rheumatism."

REPORT OF AN EPIDEMIC OF GLANDULAR FEVER

(INFECTIOUS MONONUCLEOSIS)

By R. R. SPENCER, Surgeon
United States Public Health Service

On July 27, 1926 Doctor C. T. Smith of Rocky Mount, North Carolina, reported the occurrence of about 30 cases of a disease characterized by high continuous fever, enlargement of the spleen and lymph glands and a macular rash appearing over the chest, abdomen and extremities about the third or fourth day of fever. Widal tests were invariably negative and the condition did not respond to quinine administration.

The writer arrived in Rocky Mount, a city of about 16,000 population, on July 28, 1926 and was able to see many of these cases, the majority of which, however, were now in the convalescent stage. The outbreak had begun, as far as could be ascertained, about the first week in July—the largest number of cases occurring from July 10 to 20. It is probable that sporadic cases had occurred before, and one physician reported that his eleven-year-old daughter had a similar infection with enlarged lymph glands a year previously.

Symptomatology

The typical cases were characterized by a few days of general malaise followed by one or more chills and fever, severe headache especially in the eye muscles and occipital region, and a general aching all over the body. Nausea and vomiting and a slight sore throat occurred in about half the cases seen. The fever was usually high at first and gradually tapered off to normal with an average duration of 7 to 10 days. In one typical case (No. 8) fever on the 29th day was 101° F. in the afternoon. Enlarged tender lymph glands developed in 14 of the 26 cases tabulated below. In some instances the enlarged glands did not develop or were not recognized until late in the illness. Suppuration of the glands did not occur. An unusual feature of the condition was the appearance of a faint but definite rose colored macular rash over the chest, abdomen and flexor surfaces of the arms in 13 of the 26 cases. In one case (No. 21) the rash was definitely maculo-papular and covered the entire body except the face. This case did

not show enlarged glands and his blood on the fifteenth day after onset did not agglutinate *B. tularensis* or *B. proteus* X 19. As a rule, convalescence was prolonged—the patients remaining weak for days. There were no fatalities.

Animal Inoculation

Guinea pigs were injected with citrated blood from cases No. 1 and No. 19 (Table A) taken on the fourteenth and third day of fever, respectively. These animals showed no elevation of temperature and remained normal for eighteen days.

Since the etiology and mode of spread of this condition was unknown an investigation was made along the following lines:

City water supply—An inspection of the city filtration plant showed that the daily consumption at this time of year is about 2,000,000 gallons. This amount does not tax the capacity of the plant. The water taken from the Tar River is first treated with 500 pounds of alum and 25 pounds of soda per day and permitted to settle in a baffled reservoir of 250,000 gallons capacity. It is then passed through six rapid sand pressure filters. These filters are washed every twelve hours by reverse flow. The clear water is then treated with 3½ pounds of chlorine gas (Wallace and Tiernan apparatus) per million gallons. A bacteriological count is made daily at the city health department. The records show that the water rarely has had a total count in excess of 100 organisms per c.c. and that *B. coli* has been invariably absent in 10 c.c. amounts for the past two or three months. Under such conditions the water supply could not, reasonably, be held responsible for the epidemic.

In addition, two of the cases seen occurred at homes out of the city, each having its own source of water. Other cases were also reported from adjacent country.

Milk supply—Among thirty typical cases, twelve stated they drank no milk, seven had milk from their own or neighbor's cows, five obtained milk from

TABLE A

Case	Age	Sex	Occupation	Date of onset	Severe headache	Sore throat	Nausea or vomiting	Dermatitis	Rash	Bulging eyes	Enlarged spleen	W. B. C.	Widal test	REMARKS
1	46	M	Tinner	7-15	+	+	+	Post. cerv.	+	—	—	6,200	—	Blood culture negative. Guinea pigs injected 14th day of fever were negative.
2	12	F	Schoolgirl	7-8	+	0	+	Epitrochlear	—	—	—	0	—	
3	38	F	Housewife	7-8	+	0	—	—	—	—	—	0	—	
4	14	F	Schoolgirl	7-8	—	—	—	Post. cerv.	—	—	—	0	—	
5	33	M	Insurance agent	7-15	+	+	+	Post. cerv.	—	—	—	0	—	
6	30	M	Battery worker	7-21	+	—	—	—	—	—	—	0	—	
7	3	M	Baby	7-15	—	—	—	Post. cerv.	—	—	—	7,000	—	
8	32	M	Furniture dealer	7-7	+	—	—	Post. cerv.	—	—	—	7,000	—	46.8% small lymphocytes.
9	12	F	Schoolgirl	7-13	+	—	—	Post. auric.	—	—	—	0	—	
10	13	M	Schoolboy	7-15	+	+	+	Post. cerv.	—	—	—	0	—	Case 7 miles north of city.
11	38	M	Policeman	7-13	—	—	—	Post. cerv.	0	—	—	0	—	Case 2 miles north of city.
12	45	M	Jeweler	7-11	—	—	—	Post. cerv.	—	—	—	0	—	
13	15	M	Schoolboy	7-10	—	—	—	Post. cerv.	—	—	—	0	—	
14	33	M	Foreman car shop	7-12	+	—	—	Post. auric.	—	—	—	0	—	
15	21	F	Housegirl	7-22	+	—	—	Post. cerv.	—	—	—	0	—	
16	17	F	Schoolgirl	7-15	—	—	—	Sub. cap.	—	—	—	0	—	
17	19	M	Schoolboy	7-10	+	—	—	Post. cerv.	—	—	—	0	—	84.6% small lymphocytes.
18	31	F	Cashier	7-12	+	—	—	Post. cerv.	—	—	—	0	—	
19	28	M	Auto salesman	7-27	+	—	—	Post. cerv.	—	—	—	0	—	
20	34	M	Railroad engineer	6-29	+	—	—	Post. auric.	—	—	—	0	—	
21	21	M	Pipe fitter	7-20	+	—	—	Post. auric.	—	—	—	0	—	
22	19	M	Schoolboy	7-11	+	—	—	Post. cerv.	—	—	—	0	—	
23	33	M	Car repairman	7-18	—	—	—	Post. auric.	—	—	—	0	—	
24	30	M	Policeman	7-15	—	—	—	Post. auric.	—	—	—	0	—	
25	43	M	Jeweler	7-12	+	—	—	Post. cerv.	—	—	—	0	—	
26	49	F	Housewife	7-5	+	—	—	Post. cerv.	—	—	—	6,400	—	

NOTE. + Presence of symptoms or positive laboratory findings; — Absence of symptoms or negative laboratory findings; 0 Symptoms not determined or laboratory test not performed.

TABLE B
Agglutination Test

Case	Day of Disease blood taken	Agglutination for B. Tularensis	Agglutination for B. Proteus X 19	
1	14	—	—	Case No. 1 in Table A
2	29	—	—	Case No. 3 in Table A
3	3	—	—	Case No. 19 in Table A
4	15	—	—	Case No. 21 in Table A
5	26	—	—	Case No. 25 in Table A
6	11	—	—	Cases not included in Table A
7	8	—	—	
8	24	—	—	
9	15	—	—	

TABLE C
Differential Blood Count of Eight Cases in Percentages

Polymorphonuclear Neutrophiles.....	49.1	13.2	20.0	17.5	40.1	31.3	50.7	43.4
Large Lymphocytes.....	3.2	2 1	7.3	5.1	9.1	4.2	3 3	4.4
Small Lymphocytes.....	46.3	84 6	70.8	76.2	47.1	61.4	43 8	52.2
Large Mononuclears.....	0	0	2.2	1.4	3.8	4.1	2.2	0
Transitional.....	0	0	0	0	0	0	0	0
Polymorphonuclear Eosinophiles.....	1.3	0 3	0	0	0	0	0	0
Polymorphonuclear Basophils.....	0	0	0	0	0	0	0	0

Cooper's dairy, three from the Little Rock Dairy, two from Griffin's dairy, and one from Meadow Brook Dairy. It is therefore safe to conclude that no one source of milk could have been responsible for the outbreak.

Ice cream—Practically all the ice cream sold to the public in Rocky Mount is furnished by the Southern Dairies Company. The ice cream mixture for the local plant is prepared at Wilson, North Carolina. The Wilson plant was inspected on August 7. The ice cream mixture is pasteurized by means of steam coils at a temperature of 160° F. This temperature is held for 30 minutes after which it is quickly cooled to about 35° F. It is then shipped by motor truck to Rocky Mount. Milk cans which have been sterilized by a steam jet are used. It is then immediately frozen.

Several of the cases, upon questioning, claimed never to have eaten ice cream.

Insects as possible vectors—Because of the evidence of enlarged post cervical, post auricular and sub occipital lymph glands, head lice were looked for especially. None were found.

A careful survey about homes as well as in the business district revealed no larvae of *Aedes Aegypti* although

ideal breeding places for such mosquitoes were numerous. A few culicene mosquitoes were found.

Contagion

The cases reported by the physicians were scattered and no definite relationship or contact appeared to exist between them. However, a house-to-house survey in a selected area of the residential section and another in the business district uncovered a number of cases that suggested a spread of the condition from one person to another. A history was also obtained of many mild and abortive attacks which would far exceed the actual number of cases seen and reported. In one family of four, the three children came down within a week, the mother escaping. The oldest boy, aged 20, who worked in a confectionery store was taken first. In the same store employing eight people, four boys and two girls, ranging in age from 16 to 20, were stricken within two days. The two older employees escaped. In four of these cases enlarged glands in the post cervical and sub occipital regions were still palpable and visible after returning to work.

In another firm of eight employees, four, all under 24 years, were taken

sick from July 10 to 20. Another developed tender glands in the neck but did not feel ill enough to stop work.

In still other firms a history of two or more cases was obtained. Other firms employing from 5 to 20 workers remained free of the infection. There were many reports of indefinite illness with fever and headache or slight sore throat for one or two days among those associated with cases. Such cases as these, it is believed, were responsible for the rapid spread of the disease and for those cases where direct contact was obscure.

The residential area surveyed contained 31 homes and a total of 173 people. Four cases from this area had already been reported by physicians. The survey revealed a total of 15 or 8.6%.

In the business district, among 23 firms visited with a total personnel of 272 there were 33 cases (11.7%).

Sixteen of these cases, all of which were seen shortly after recovery, either had enlarged palpable cervical glands at the time or distinctly recalled their presence during the illness. Others had intense soreness in the neck especially on movement but did not remember any definite enlargement of the glands.

In eleven firms with a total of 56 employees no case histories were elicited. The twelve firms in which cases occurred are enumerated below showing the relationship between the number of employees and the number of cases:

Nature of Firm	Number of employees	Number of cases
Laundry.....	40	1
Jewelry store.....	5	3
Department store.....	25	2
Department store.....	6	1
Dry goods.....	8	5
Furniture store.....	9	2
Confectionery store.....	8	6
Department store.....	24	3
Department store.....	20	4
Furniture store.....	3	1
Dry goods.....	6	2
Dry cleaning.....	15	3

Discussion

The possibility that the epidemic was one of dengue fever was considered. But the absence of the intermediate host, the protracted fever in many cases, the involvement of the glands with a marked increase in the white blood cells of lymphatic origin and the slow convalescence seems to preclude a diagnosis of this malady.

The rash at first suggested Brill's disease, but the enlarged glands, the history of so many mild and abortive cases, the negative animal inoculation, the negative agglutination of *B. proteus* X 19 in nine cases, and the blood picture seemed to rule it out completely.

Tularaemia was likewise discarded through agglutination tests and the absence of suppurative glands.

The epidemiology, symptomatology and laboratory finding fit in best with glandular fever, first described by Pfeiffer¹ as "Drusenfeber," and by Sprunt and Evans² as "Infectious Mononucleosis." The frequent occurrence of a rash was the most unusual feature in our cases, and Longcope³ reported ten cases, two of which had a macular rash over the chest and abdomen resembling rose spots. Tidy and Daniels⁴ state definitely that eruptions did not occur in their cases. As observed in some of our cases, these authors also called attention to the persistence of enlarged palpable glands in the neck several weeks after convalescence.

Other outbreaks of glandular fever have been reported from New York, New Jersey and Wisconsin^{5,6,7} and it is believed the condition has a wider distribution than is commonly recognized.

Teacher: "Amelia is a fine old-fashioned name. I will want the name used in a verse tomorrow."

This is what one bright youngster handed in:

"Old-time corned beef and cabbage
Is a feed, that's hard to beat
And if you've never tried it
It's Amelia oughta eat."

—Exchange.

¹ Pfeiffer, E. Jahrb. f. Kinderh. 1889, v. 24: 257.

² Sprunt and Evans. Johns Hopkins Hosp. Bull. 1920, v. 31: 410.

³ Longcope, W. T. Am. J. Med.-Sci. 1922, v. 164: 781.

⁴ Tidy and Daniels. Lancet, v. 205: 9-13.

⁵ Gilbert and Coleman. Am. J. Hyg. 1925, v. 5: 35.

⁶ Carlson, Brooks and Marshall. Wisconsin Med. J. 1926, v. 25: 176.

⁷ Guthrie and Pessel. Am. J. Dis. Child. 1925, v. 29: 492.

A UNITED FRONT FOR CHILD HEALTH*

By S. J. CRUMBINE, M. D.

General Executive, American Child Health Association.

Life in the trenches, beyond a doubt, was a great gamble. For of the total of nearly 5,020,000 commissioned officers and enlisted men in the World War, over 50,500 were killed in action or died of wounds received at the front. For every thousand men in the American Army, ten lives were sacrificed in combat "over there."

But, strange as it may seem, life in a war time trench and in "No Man's Land" was safer than it is in a peace-time cradle. For of every one thousand babies born in the United States today, 77 die during the first year.

In 1925 there were about 2,432,600 babies born in the United States, and of this number about 187,340 died.

These infant deaths of one single year represent a number equal to the entire soldier enlistment from Alabama, Arizona, Connecticut and Delaware during the World War. Only six states (Texas, Pennsylvania, Ohio, New York, Massachusetts and Illinois), supplied regiments that were as large as, or larger than, this great army of infant dead who were lost in peace-time America in 1923; and this does not take into account the vast number of babies who never opened their eyes to the light of this world—for no national census is available on the still births.

What does the American child need in order that in the draft of life he may not be disqualified because he is physically unfit? In the great child health campaigns which are being mapped out today, the first emphasis is being placed on the right of every baby to be born for joyous life and health—and not for a few hours or days of suffering, and then a tiny grave. "Not taps, but reveille" should be sounded for every infant life.

Education and proper care of the mother during the months preceding the birth of her child will usually insure a normal healthy child. Many hundreds of baby lives could be saved each year if expectant mothers realized the importance of prenatal care and if such care were available, either free or

at a minimum cost in every community. For a baby's life begins, not at birth, as many people suppose, but nine months before birth. This is why it is so essential for a mother to be under a doctor's regular care during this prenatal period when her baby's life is so closely associated with her own. Furthermore, for the health and safety of her baby she needs to live a simple, regular, normal life, eat the proper food, and have plenty of fresh air and mild exercise.

Expert professional care of mother and baby at the baby's birth and for the first six weeks after birth is also the right of every mother and her baby. Many mothers have laid down their lives in childbirth needlessly because they did not receive the best care at this critical time; and the overwhelming number of baby deaths within the first month of life is a challenge that no civilized state can further afford to pass by.

But although doctors and nurses, hospitals and clinics may give their best service to the mother and her new born baby, the child soon passes beyond their constant care, and must depend on his own family for health and life. If loving care always meant wise care, then the children of America would have little to fear. But even the most fond parents in millions of American homes have not yet learned what is good for their children. Therefore, with the best of intentions in the world, and believing that they are giving their sons and daughters a fair chance at life, they are rearing them as they themselves had been reared. But in the re koning, parents of today are taking account only of those other sons and daughters who grew to healthy manhood and womanhood and are forgetting that small graves sometimes captured as many as half the young children of families of earlier generations.

Meantime doctors and scientists have discovered many facts that mean a healthier and richer life for children. They have found out, for example, that

* Address delivered at the 6th Annual Camp of Instruction, Pennsylvania State Department of Health. Published in The Listening Post.

growing children need at least a pint of clean, pure milk a day; and that their every day's diet should contain fresh vegetables, fruits and cereal, and plenty of water to drink. Yet there are hundreds of children whose diet falls far short of these nourishing foods, and who are being allowed to have harmful foods and drinks. In the World War, upon the mess sergeants there rested the heavy responsibility of keeping the bodies of the soldiers in good fighting order. The mother—the mess sergeant of the home—too often fails to see that her children are kept in good growing trim. The fault is just as often a lack of understanding as it is a too lean pocket book. It is the child's right that this important information should be carried into every home.

The healthy régime of a child's life demands that he have long hours of sleep—twelve hours for children up to six years—every night with windows open, that he play out of doors every day, that every day he have some wholesome exercise to aid in his proper growth, and that he be trained to have a natural bowel movement once in every twenty-four hours.

Life is a battle of no less significance than was the battle of Gettysburg, the Marne, or of the Somme; and the verdict of the doctor is needed just as much on one's preparedness to fight the battle of life, as on one's fitness for combat in war. No soldier, regardless of his own opinion of his health, was admitted into Uncle Sam's war service until he had passed the examination of the army doctors. The number of men believing they were in perfect health who were rejected by the draft board medical examiners is proof enough of the vast difference there often is between thinking you are well and actually being so.

Because many physical defects, if recognized early, can be easily remedied, and because small defects uncorrected usually grow so big and so serious that they leave one permanently handicapped, preventive health measures today always include the periodic health examination by a doctor.

"Medicine of the future must change its strategy. Instead of awaiting attack, it must assume the offensive,"

declared Major General Sir David C. Bruce, President of the British Society for the advancement of science, at its annual meeting last spring in Canada. It is in line with these tactics that every child should be regularly examined annually by his family doctor.

The ideal sanitary environment program advocated for the health and safety of every American child is a direct application of this health offensive of which Sir David Bruce speaks. Every community containing as many as 5,000 inhabitants should protect its childhood through adequate local milk inspection and supervision. Communities of smaller size should receive this service through the State Health Department. Clean and safe milk is one of the fundamental rights of child health which we dare not deny to children without impending disaster.

Pure water is another essential to health. American soldiers who fought in France will remember that no drop of water might be drunk by the American Expeditionary Forces except from supplies which had been inspected and safeguarded by the regiment's sanitary engineer. The dangers of epidemics of typhoid fever, amebic dysentery and cholera being spread through polluted water were so imminent that an army regulation made the drinking of water not authorized by the sanitary engineer a breach of discipline subject to court martial. Peace time America needs to have its water supply safeguarded quite as effectively as did America at war.

Protection against communicable diseases is another sanitary measure which should not be denied any child in any part of America. The army had its compulsory vaccination against smallpox and its "shots" against diphtheria and typhoid. Fighting efficiency demanded immunization against these diseases. When such protective measures are applied as universally to little children as they were to the soldiers in the Army and Navy, and when peacetime quarantine against disease are observed as scrupulously as they were in the Army and Navy, then the unnecessary sacrifice of child life and child health will be immeasurably reduced.

The general public attitude today is that quarantine is a good thing for one's neighbors to observe when they

have a communicable disease in the family, but too great a hardship for oneself to be asked to endure when the misfortune comes home to us. Little children are many times the victims of the thoughtless evasion of quarantine; because abiding by the law does not suit the convenience of adults who should know better, children often must suffer weeks of illness and sometimes even death. Better quarantine laws, better enforced, should be advocated by every fair minded American for the protection of American children.

Five days a week, for about five hours a day, the American child spends in school. Sanitary school buildings, the school nurse, and such medical and dental services as are needed for the examination and supervision of school children and adequate play facilities in connection with the schools, are important phases of the solution of child health problems. Likewise since the influence of lessons learned and habits emphasized in the classroom are carried over into the home life and into adulthood, every school teacher should be able to teach good health as efficiently as she teaches reading, writing and arithmetic.

Classrooms should be permeated with the desire to be clean and healthy and possess the equipment to achieve these ideals. "Teacher told me always to wash my hands before eating," is the reason for many a child's inaugurating the hand washing habit before meals in his own home, or the fashion that "everybody else in my class has oatmeal and milk for breakfast" soon tempts the persistent young coffee-and-bun eater to follow the better example of his wiser comrade. Often the teacher's influence of the example of the classroom is greater than the example in the home. Therefore, it is essential that health habits be planted early in the schools.

The right to be born healthy, the right to wise home care, the right to live in a community which protects its children, and the right to sanitary environment and positive health influences in the schools—these, then, may be considered among the primary "Bills of Right" of childhood.

The American Child Health Association, under the presidency of Herbert

Hoover, is a national organization believing in, and working toward, these goals. This Association is convinced that concerted effort by public and private agencies, and especially the awakening of parents and citizens generally to their responsibility for the health of the children of their community is a vital national need.

In the program of the American Child Health Association for saving the lives of new born babies are included birth registration campaigns. Many communities do not know how high their infant death rate is because doctors, midwives and parents are too careless to register new births. As a consequence children die by the score while the town at large is oblivious to the high mortality, and takes no measures to reduce it. Other babies grow up to manhood and womanhood without having their births recorded. Legal proof that they have come of age to go to work, or to vote, or to enlist in Army or Navy, or to secure passports, or to inherit property, or to secure a pension, is denied them through the careless negligence of those who officiated at their birth. They are in truth children and men and women without rights and without a country, for they can never even prove that they were ever born!

For the further protection of motherhood and babyhood, through midwife studies, the Association is lifting the veil of danger and ignorance surrounding childbirth in certain section of the country. In some southern communities, particularly, it is being shown that mothers in childbirth are entrusting their lives and those of their babies to colored midwives who are dirty, ignorant, illiterate, and steeped in superstitions. Legislation is being urged to eliminate the unfit, classes of instruction are being carried on for those who are willing to learn, and complete registration and supervision of midwives is being effected through coöperation with the State and local health authorities.

By agreement with State and local authorities, the American Child Health Association is likewise conducting "clean and safe milk" campaigns in a number of States, in coöperation with State and city health departments. They have a milk testing laboratory

on wheels, which moves from State to State. Samples of milk collected from local dairies are analyzed in the laboratory and after the testing, full reports are made to State and local health departments, to the dairymen and to local men's and women's organizations. The effect of these announcements of health is giving closer attention to the question than has ever been done before. The dairymen themselves, waking up to their responsibility, are taking measures to improve their milk supply.

Work with educational groups and particularly with teacher training institutions, giving assistance in mapping out programs in health education, is another of the major pieces of work of the Association. An equal force is being exerted to line up medical groups and practicing physicians all over the country to a necessity for improving medical standards and local facilities in this offensive campaign for child health.

One of the most outstanding pieces of child health work of the Association during the past year has been a

survey of all activities, public and private, relating to child health in all the cities of the country with populations between 40,000 and 70,000. Eighty-six such cities were surveyed, located in 31 different States. The facts revealed in these studies are making it possible for this Association and every other group interested in public health to serve better the interests of American childhood. The health habits of 35,000 school children, community activities for mothers and babies, public health departments, communicable disease control, school health work, and milk and water regulations were among the conditions studied in each city surveyed.

Nowhere in the United States is child health work progressing so rapidly as it might if every civic group and institution and every professional agency were allied in its cause. If they will set their minds to the attainment of child health, if they will volunteer their strength for the reinforcement of their community's child health program, the goal will be far nearer at hand.

NELAGONY, OR GOOD WATER

1926 FIRST PRIZE PLAY

By ANEMONE PEMBERTON, Pawhuska, Okla.

Published in Bulletin of the National Tuberculosis Association

CHARACTERS

DAVID BRECKENRIDGE—A young southern doctor.

HO-TAHU-MOI—Chief of the Indian Tribe.

TISHOWANA—The chieftain's daughter.

SASHEWAWA—Medicine man.

Tom—David's colored valet.

TEI-CUM-SAH—An old Indian.

MAH-SHE-TO-MA AND TAHoya. Young braves.

SCENE: *The forest or any colorful out-door place with a tepee at the right and a tom-tom at the center. Two openings L and R.*

(Low, mournful chanting and drum beats are heard as curtain rises. A

"brave" sits beating the tom-tom, while the medicine man dances around it. The tribe stands in the background, men, women—some with babies on backs—and children. There are about twenty in the tribe. On soft blankets in front of the small tent rests the dead chief. Tishowana kneels by his side, her face buried in her hands.)

SONG: The Appeal (*by the tribe*)

Aluewa! Aluewa! Thou Mighty One, Save us, thy children, Great Chief of the sun! Slay him! Slay him! Slay the Mighty Evil, Who with his breath kills us, your people.

Aluewa! Aluewa! With thy great hand
Take the Evil One from out our land.
Slay him! Slay him! Slay the Mighty
Evil,
Who with his breath kills us, your
people.

(Shortly before the close David and Tom walk in at L., David carrying a doctor's case and appearing very bewildered. Tom, hands full of luggage, hesitates behind and seems frightened.

Soon the tribe notices them and backs noiselessly off stage at R.

Tishowana still kneels beside her father.)

DAVID: *(walking toward Tishowana)* I beg your pardon, Miss but—
how stupid. Of course she can't understand me.

TISH: *(rises to feet)* Yes, I know what you speak. Tell me, white man, what you want?

DAVID: Oh! fine! What do I want? At the moment, I should like to know the reason for the very impressive ceremony of which I had the good fortune to be witness.

TISH: Oh! that was my people asking, praying for help from the Great Spirit, the Mighty Magician, who can with his one hand slay this Evil One who has for many moons been sending a fever upon our tribe. First of all to leave us was Wy-e-nah-she, the mightiest warrior of our tribe; then went Lah-wah-wal-la, wife of O-sah-ke-pah, and mother of five men children who followed her to the happy hunting grounds, one by one. All these were slain by the Evil Spirit who tortures for many weeks before he slays. And now look you, white man, upon the face of the mighty Ho-tahu-moi, bravest and kindest of chiefs. Look you upon his pale face! Can you not see the breath of this Evil One? Aluewa! Aluewa! He is dead! dead! our mighty chief, my own father. He has left us to fight alone this fever; left us, his children, and gone on westward, westward. *(Points westward and kneels sorrowfully down beside Ho-tahu-moi.)*

DAVID: *(to himself)* An Evil One, eh! It looks very much like typhoid to me. *(Turns to Tom, who has been standing awed and silent during this conversation)* Set down the grips, Tom.

I think we will remain here for a time. These people seem to be in great need of medical aid, and I shall offer myself to their service.

TOM: Yes, sah, marse David, but dese heah people don' look none too peaceful. I's warnin' you, you bettah be kinda keerful. *(Sets baggage down and begins looking about.)*

DAVID: These people are very harmless, Tom, and we are certainly needed here badly. *(Kneels beside the sobbing girl)* Now, now, Miss chieftainess. Come. Be brave. Your people need you. *(Lifts her to her feet)* I am going to remain here and fight this Evil One who has killed your father and many others. Won't you tell me your name, fair princess?

TISH: I am called Tishowana. And you, O white man, who are you and from where did you come?

DAVID: My name is David Breckinridge and I am a doctor. Tom and I are from the South, and we are going farther on West to visit my aunt who lives there. I am very happy now that my automobile broke down and sent us seeking a village or a place of lodging, for I can help you and your people if you will let me.

TISH: Doctor Man, I thank you, for great is my fear of this fever. I know you can help, for in the mission school far in the city I learned much of the mighty doctor men and their great power.

DAVID: That is fine of you to believe in me. Tom, will you go and bring the remainder of our provisions from the car? Tishowana, while he is doing this, I shall look over your water supply if you can direct me to it.

TOM: Yes, sah, marse David. *(Exit Tom at L.)*

TISH: It is far down the trail. *(Goes to right and calls)* Tahoya! Tahoya! Kuewai! Kuewai! *(Enter Tahoya at R.)*

TISH: Tahoya, this is a mighty doctor man that the Great Spirit has sent to fight the Evil One. Take him down the trail and show him the stream which gives us water for our thirst.

DAVID: Goodbye, Tishowana, I will be back soon.

TISH: Goodbye, Doctor Man. *(Exit Tahoya and David at R.)*

TISH: Kuewai! my people, kuewai! (*Enter tribe at R. group on stage*) Take your mighty chie^f into the forest. Take the great Ho-tahu-moi into the green woodlands and bury him 'neath the earth, saupa, the black earth, and return when the sun is above you that you may heed the words of Tishowana, your chieftainess. (*Goes over to the body of Ho-tahu-moi*) Farewell, oh great and kind Ho-tahu-moi! Farewell, my father. Go on into the west land and prepare a place for your people that we may follow in your footsteps. Farewell! Farewell! (*Four braves carry him out at R. Tribe follows slowly in a procession.*)

(Enter Tom at L loaded with provisions.)

Tom: I done been and gone and got dese heah 'visions, marse David. What am I to do wid 'em? Oh! Lordy! he ain't heah. Has you all done scalped him?

(Enter David and Tahoya at R.)

DAVID: No, Tom, I am right here. Set the provisions down and make yourself comfortable. I have work to do.

Tom: Com'f'able? Marse David, de ain't no sich word in dis heathen lan'!

(Sets provisions down and exits at L.)

DAVID: Tishowana, I have found the cause of this dreaded fever whose real name is Typhoid.

TISH: Is that what this Evil One is called?

DAVID: Yes, and the water which you drink gives you this fever.

TISH: Is the breath of the Evil One in the water?

DAVID: Exactly that. Is there no other place where you can get water to drink?

TISII: Far up the mountains there is a little spring; but the trail is rough and the journey long.

DAVID: Perhaps that is true, Tishowana, and yet you must get water from there if you are to save your tribe.

TISII: I will, O Doctor Man, for your words are mighty pools of wisdom.

DAVID: Fair Princess, I am very glad you think so. I have never in all my life wanted to help anyone so badly as I do you and your people. (*Enter tribe at R.*)

TISH: My people, for many moons an Evil One has been sending a fever upon us. At sunrise we offered a prayer to the Great Spirit, and he, with his mighty love for his children, has sent a doctor man to fight the Evil One. Sashewasa has failed to drive away this mighty Evil, and now let us heed the words of the wise white man who was sent to us from the Mighty Magician.

DAVID: Friends, this Evil One who sends his fever upon you dwells in the streams from whose depths you receive your water.

SASHEWAWA: Come, braves! with our arrows we will kill him.

TRIBE: (*In unison, holding up their bows and arrows*) Kill him! Kill him! Kill the Evil One!

(At this point have Tom enter from L with a roll of blankets. On seeing the warriors with drawn bows apparently aiming at him, he tosses blankets and hat in the air and disappears L.)

DAVID: No, no, my friends, you cannot kill him. He is not like the mighty bear, nor even like the timid rabbit, for this Evil One is called a germ and is so small you cannot see him. You have drunk the water of the stream and now have within you this germ, this Evil One.

TRIBE: (*in unison*) We will die! Aluewa! We will die!

DAVID: No, you will not die, for I have a mighty needle that can kill this germ. (*Goes to case and brings forth needle*) See, friends, it has a magic power which alone can slay the Evil One. I shall place the needle in your arm like this (*illustrates on his own arm by placing needle against flesh*) then with the true aim of a hunter who spies the red deer in the forests, I shall kill this deadly germ, kill him with the powerful needle, and thus you will be free from the Evil One. Let some young brave step forward that he may be the first to be freed from this germ that is called Typhoid Fever. (*Advances toward them.*)

TRIBE: (*backs fearfully away*) No! No! It will kill us! No! No!

DAVID: Don't be afraid, my friends. It will kill the Evil One, but it will not harm you.

TRIBE: (*shouting*) No! No! No!

TISH: O, Doctor Man, we cannot understand it—your mighty needle. It is so strange and powerful. My people are afraid, and even I, their chieftainess, fear it.

DAVID: Tishowana, you fear it? Not you, surely?

TISH: Your spirit is brave and good and your words are wisdom, but I cannot understand them.

DAVID: (*sadly*) You do not believe in me then, lovely Tishowana?

TISH: O Doctor Man! It is not that I do not believe in your words. It is only that I am ignorant of your ways—ignorant of the powerful needle. What we cannot understand, we fear.

DAVID: If only I could show you and your people that it is harmless, I could save them from the fever. (*Addresses the tribe*) Is there not one of you who will be brave enough to allow me to kill the Evil One within him?

TRIBE: (*Bucking still further away*) No! No! Osh-kee-ka! No!

TEH-CUM-SAH: Young white brave, seventy winters have flown over my head, and seventy summers have I trod the forest path. I have killed the rattle snake in the summer and tracked the coyote to his den in the winter. Always have I been known as "brave Teh-cum-sah, the mighty," but, White Doctor, I fear your magic needle more than the rattle snake, more than the coyote.

MAH-SHE-TO-MA: He speaks words of wisdom, O White Man. Though I have seen not many summers, even now they call me "Mah-she-to-mah, the brave one," but I, Mah-she-to-mah, would not brave your needle.

DAVID: Then I have failed to save you. Must I admit defeat and go my way?

TISH: No, no, Doctor Man. (*Rushes to him*) I, Tishowana, their chieftainess, will brave the magic needle. (*Turns toward tribe*) Surely, if I am saved, my people, you, too, will let him kill the Evil One within you?

TRIBE: (*Nods an affirmative and raise arms*) Ho! Ho!

TEH-CUM-SAH: Go, brave Tishowana. Go! If it kills you not, we follow.

TRIBE: (*shouting*) Ho! Ho!

(*Tishowana takes the serum. The tribe looks on fearfully*)

(Re-enter Tom.)

Tom: You still alive, marse David?

DAVID: Certainly, Tom, you are just in time to assist me in vaccinating these newly-acquired friends.

Tom: Dey is friends now, but de ain't no tellin' what dey 'ud be ef you let dat needle slip. Be mighty keerful, marse David, I shore 'ud like to see my sweet Clarena once mo' befo' I die.

DAVID: (*finishing the vaccination*) Now, lovely Tishowana, the Evil One is killed and you are saved.

TISH: You are wise, oh, very wise, Doctor Man. How could I have doubted you. Come! my people, see! I am saved and the Evil One is killed.

TRIBE: Brave Doctor! Brave Doctor! Ho!

TEH-CUM-SAH: Take me, White Doctor. Take the mighty Teh-cum-sah!

(*David begins vaccinating the tribe; Tom carries his instruments and supplies.*)

Tom: (*after David has vaccinated about six*) Be mighty keerful dere. Don't let dat needle slip.

DAVID: Why, Tom, don't you trust my sureness of hand?

Tom: Yes, sah, but I ain't trustin' dem bows and arrows none too much.

DAVID: (*finishing the vaccination*) Now, my friends, the Evil One is killed, but you must not drink his poisoned water or again he will send his fever upon you. Go up to the mountain spring and bring the good, fresh water down here that you may drink the purest and best. Tom, you may go with them and help.

Tom: Does I has to, marse David?

DAVID: Don't you want to be of help, Tom?

Tom: Ef you put it dat way, I reckons I does, but you shore is makin' slim my chances ob eber seein' my sweet Clarena agin.

(*Exit tribe and Tom at R.*)

DAVID: The sun is setting, Tishowana. How beautiful it is in the west!

TISH: Yes, Doctor Man, our land is going to be happy once again since you have shown us the way to health. You have done much for me and my people; I thank you, Brave Doctor.

DAVID: By those words I have been repaid. I love you, Tishowana.

TISH: And—I love you, Doctor Man.

SONG: Sunset. (*By David and Tishowana*)

A beautiful Indian maid are you
With eyes of the darkest raven hue.
Your laugh is the lilt of the flowing
brook,

That murmurs gently through a shaded
nook.

I take your hand, Tishowana, my own.
The bravest, sweetest girl I've known.

O, doctor of mine, you are brave and
wise;

Great manliness shines from without
your eyes.

You saved my people from the Evil One.
And now, when the day is over and
done,

I give you my hand for ever and aye,
And "I love you" are the words that
I would say.

(DUET)

In the scarlet west the sun is setting,
And the squirrel in his tree-top is fretting;

The wind whispers gently through giant
oaks,

And the fire-of health from the wigwam
smokes,

Hand in hand we'll follow the winding
trail

Over life's mountain peaks, down to
the vale.

*(Tribe returns carrying buckets and
bowls of water. Tom brings up the
rear.)*

TRIBE: Nelagony! Nelagony! *(They set buckets down.)*

TOM: Marse David, when is we gwine
to leave this heathen lan' an' go home?

DAVID: How can you talk of home
when you see how happy I am!

TOM: Oh, Lordy, dey ain't no mo'
chance ob me gittin' to see my sweet
Clarena.

(Sasheiwana begins to beat the tom-tom. Tribe begins singing. Curtain goes slowly down.)

SONG: Sleep (*By the tribe*)

The black night falls:

The tom-tom calls;

The stars give light;

The fire burns bright.

Come! To the wigwam let us go,
While the winds in the tree-tops blow:
Health and happiness now have we,
From the Evil One we are free.

The night bird screams:

The pale moon beams;

The fireflies peep;

Let us sleep!

Indian words pronounced and explained.

In proper names give all syllables
equal accent.

Wy-e-nah-she = Wí-é-ná-shé

Ho-tahu-moi = Ho-tá-moy

Tishowana = Tish-o-wa-na

Teh-cum-sah = Te-cum-sa

Mah-she-to-ma = Ma-she-to-ma

Tahoyo = Ta-hoy-a

Lah-wah-wal-la = Láh-wá-wál-lá

O-sah-ke-pah = O-sá-ke-pá

Aluewa = A-loo-wa; an expression of
sorrow or grief

Kueawai = Cue-wa; come hither

Oshkeeka = Osh-kee-ka, it is not good;
it is bad

Nelagony = Ne-lag-o-ny, means good
water. Ne is water, lagony is good.
The Indians put the noun before its
modifying adjective.

THE BABY TEETH

BY WILLIAM R. DAVIS, D.D.S., Michigan Department of Health

Physicians tell us today that care of the baby teeth is just as important as of the permanent ones because bad baby teeth often cause diseased tonsils, enlarged glands, earache, a bad heart or other trouble that may last through life, or even shorten life. Infected baby teeth lower vitality and resistance to disease, and cause dull, listless children, poor school work, and sometimes failure to pass grades.

Start taking your child to a good dentist at two and one-half or three years of age. Even four years may be too late, as frequent abscessed baby teeth at this age testify.

Do Not "Leave Them Alone"

Unfortunately, too many dentists do not like to work for children. They will not fill baby teeth or extract aching or

abscessed baby teeth, and will tell you to "leave them alone."

But, if your child had abscesses on the arms or legs or chest which you had to bandage, and your doctor said to leave them alone and made no attempt to cure them you would hunt up another doctor, wouldn't you? Do the same with your dentist.

Bad baby teeth should either be filled or extracted. They may be past aching, and you cannot see the oozing, but it is worse running down the throat than outside in a bandage.

Visit Your Dentist Early

Remember, *the teeth often come through with tiny holes in them too small for you to see*, little defects in the enamel which can be filled so easily in the beginning.

Going to a good dentist early is the economical thing to do and the only safe thing to do. It is easy to start a child when the work is simple. Tell him that *the dentist prevents pain* if only given a chance early enough.

Children showing a marked tendency to dental decay should have a thorough examination by a good physician with special reference to general nutrition.

Diet is Important

Diet is very important in producing good teeth. Mother's milk is by far the best food for the baby, but even that may be lacking in certain necessary qualities if the mother is not well or is not choosing the right foods for herself. When breast feeding has to be supplemented, or a substitute found, be sure to consult your doctor. Many "baby foods" or condensed milk products are

almost entirely lacking in minerals. They may produce fat babies, but the bones and teeth will be poorly formed. Be sure that your baby has the right food to build good bones and teeth.

The first baby tooth comes in at about six months and the whole set of twenty is usually complete at two and one-half to three years of age. The habit of brushing the teeth with a small brush after breakfast and before going to bed should be formed as soon as the entire baby set has erupted.

Prevent Facial Deformities

Even the permanent teeth may be deformed by sickness during the first few months or years of the child's life. That scarred, rough and unsightly appearance sometimes seen in the permanent teeth that come through at six or eight years of age was probably caused by disease. The enamel forms on the crowns then, and disease may pit and scar it to show up years later when the teeth come through. Keep the baby away from exposure to any communicable disease.

Do not allow the baby to have a "pacifier," and stop any habit of thumb or finger sucking, as these may permanently deform the face and teeth.

Remember!

Baby teeth are important!

Prevent infection by having them examined early and filled when necessary.

Guard the baby from exposure to communicable diseases.

Prevent deforming habits.

Build good teeth with proper food.

Candy sparingly, never between meals.
—Michigan Public Health.

THE MAIN ISSUE

Calories, while important, are not everything. However, thousands of people think they are. For calories together with vitamins have been exploited with an efficiency and generality comparable to the multi-million dollar campaigns of nationally advertised commodities. One today is ignorant indeed who does not know the potency and miraculous reconstructive forces in these magic elements—calories and vitamins.

But there is such a thing as overdoing it. And calories at least are fast becoming over-cooked. Common sense recently has been lost in many instances when the calories have stepped in.

A lady of forty odd years weighed entirely too much. She was listless, irritable and neuralgic. She carried a lap dog, and her limousine carried her. Then came the calories. She now is thin and pale and haggard and starved.

But she is triumphant! She has attained her fancy—a reduction of forty-five pounds. But literally, she is a sight. From being a not unattractive "stout," she is a forced "thin." And every inch looks the part. She appears to be sick; and one is inclined to believe that it is impossible to possess her appearance and not actually be a bit miserable. But she is *not*. She enjoys life, she revels in abundant health, she sleeps like a babe, and incidentally, has herself fooled. Also the limousine still carries her.

Another lady, turned twenty, weighing fifteen pounds less than the standard tables indicate that she should weigh, eats a modicum of butter and sparingly of candy, cake, ice cream, bread and potatoes. She too is calorizing. She *will* retain her flapper figure—and starve herself to do it! The suspicion of a rounded (and incidentally beautiful) figure fills her with horror! She is tired all the time. She lacks "pep," she is even pale, but she *is* thin. She too is triumphant. Calories here also have been worked to an illogical frazzle.

Now the main issue in both these examples has been entirely submerged, namely, the health factor. After all, what does it profit a woman, or man either for that matter, if straight lines are gained—and vigor is lost? That is the real question.

Many people, men and women alike, have natural physical tendencies to reasonable stoutness (there is a difference between satisfying robustness and unsightly fat). To block nature, via starvation, is to block health, the only thing on earth that is essential to a human being. Health, and health alone, is the golden key that unlocks happiness for the individual. So why this over-doing and extreme foolishness? In which, by the way, many of the sterner sex are also becoming devout disciples. In all the caloric technique, one of the most necessary factors to the attainment of physical normalcy is usually overlooked, namely exercise.

In the "good old days" humanity was not such a pampered lot. Fat didn't get such a wonderful chance to grow, and its opposite, thinness, also did not have

the splendid opportunity that presents itself today.

Why not try a bit of real physical work, hard work for a change; and this, whether you are too fat or too thin. A job that brings out the sweat daily is nature's own standardizer. Under the discipline of manual labor, the muscles harden, the blood gets action, the body gets what it demands—and calories can in great measure be forgotten. You are not all head and automobile, though most of us think that's about all there is to it. We still have our body and muscles and nerves. Nature says, use them.

Health and proper weight are yours for the *working*. A measure of hard physical work daily and moderation in your general habits is sensible formula. Calories have their place. But as a substitute for nature's requirement of physical action, they are nearly worthless. Weigh what you should weigh. The health way is work. Don't be afraid or ashamed to sweat.

If so foolish a man as the deposed Kaiser knows the value of a woodpile, why don't you?—*The Listening Post*.

Don't struggle against an undertow if you are caught; go with it and call for help.

Don't wade with your hands above your head. You'll go down like a plummet in deep water.

A HARD STUNT

Doctor: "Deep breathing kills bacteria."

Patient: "But how can I MAKE them breathe deeply?"—Exchange.

"Why use such a high crib for your baby?"

"So we can hear him when he falls out."—Exchange.

Visitor: "To what do you attribute your long life, Uncle?"

Oldest Inhabitant: "Well, I don't rightly know. Several of the patent medicine companies is bargaining with me now!"

VACCINATION ALONE PREVENTS SMALLPOX



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IT IS SAFE AND CHEAP INSURANCE



The Health Bulletin

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DECEMBER, 1926

No. 12

BUY Christmas Seals Fight Tuberculosis



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"THE CHILD IS FATHER TO THE MAN"

This bulletin is devoted largely to the child and the importance as well as ways and means of growing the said child into a strong, vigorous, intellectual being, which at maturity we call man.

No apology is offered or needed for the contents of this bulletin because if the civilization of this great state and of this great country of ours ever goes into decadence, it will do so on account of our failure in the above referenced object. And per contra, if we are to become a greater, more important, more intelligent state and nation; if we are to continue to be the greatest of all nations in the world, and the opportunity is open to us and the responsibility is upon us if we only accept it, it will not be ours because of our vast amount of wealth, nor yet because of our mines, oil, timbers, or factories, but it will come to us, if at all, because we are able to create normal children and grow them into strong, healthy men and women, than which there is no greater thing, for we work together with God in the creation of the children, the men and women who are to follow us. Luther Burbank says: "If we had paid no more attention to our plants than we have to our children, we would now be living in a jungle of weeds."

—L. B. McBRAYER.

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NEW CHILDREN'S BUILDING AT NORTH CAROLINA SANATORIUM

By P. P. McCAIN, A.B., M.D., F.A.C.P.

A children's building has been one of our greatest needs at the North Carolina Sanatorium for many years. At last this need has been met. From the accompanying picture a very good idea can be obtained of our splendid new building which will be ready to receive fifty little patients on January the 1st, 1927.

The most modern ideas are embodied in the construction of the building, the plans for it having been drawn after a visit had been made to a number of the best children's sanatoria in this country.

It is fire proof. There are specially arranged porches for giving the children heliotherapy (sun treatment) and room for ultra-violet ray treatment. The whole third floor is for isolation purposes where any contagious diseases which might occur can be treated separate and apart from the other children. There are also separate wards and bath rooms for the few children who will have germs in their sputum.

Within the building also are open-air school-rooms. We will have experienced teachers, so that the children



CHILDREN'S BUILDING AT STATE SANATORIUM
(Nearing Completion)

will have the opportunity of keeping up with their grades while they are taking the cure and being restored to health.

There is also a separate dining room and kitchen for the kiddies where their diet will have special attention.

The building is wired for a radio head phone to each one of the beds.

We are hoping that some generous-hearted lover of children and friend of the institution will give us a radio set and fifty head phones.

With such facilities taking the cure will be a pleasure for the children. Their homesickness will be dispelled and their recovery will be both more sure and more rapid.

TUBERCULOSIS MEETINGS IN WASHINGTON CITY

Between the dates of September the 30th and October the 8th of this year there were held in Washington the Fifth Conference of the International Union Against Tuberculosis, the Twenty-second Annual Meeting of the National Tuberculosis Association, the meeting of The American Sanatorium Association—and that of the Southern Tuberculosis Conference.

Present at these meetings were the most distinguished workers in the various fields of tuberculosis from all parts of this country and many of the most distinguished clinicians and research workers from a number of the nations of Europe and South America. It was most encouraging to see to what extent the brightest minds in the field of medicine, sociology and political economy are devoting themselves to the problem of overcoming tuberculosis. The National Tuberculosis Association has succeeded through its Research Committee in securing the services of the foremost bacteriologists, anatomists, biologists, chemists and pathologists in this country and two of our largest and most reliable commercial pharmaceutical houses for a coöperative study of the various problems of tuberculosis.

This study will probably not result in the discovery of a specific medicine or serum as a cure for tuberculosis, but the study will be sure to result in a more exact knowledge of the factors which influence the growth and development of the tubercle bacillus and which have to do with the resistance of the human body against infection and the spread of the disease.

It was gratifying to know that in this country we are proceeding in our fight against the Great White Plague along the lines which have proven to be the most effective and economical. Emphasis was laid on the need of more sanatorium beds since it was shown that the death rate from tuberculosis in the various countries of the world is strictly in inverse ratio to the number of sanatorium beds provided.

Some splendid papers were presented on sun and artificial light treatment and on artificial pneumothorax and chest surgery. All the authorities were unanimous in the opinion that while these methods of treatment in suitable cases are distinctly advantageous the sheet anchor in the treatment of tuberculosis is REST and that nothing will take its place.—P. P. McCAIN in the *Sanatorium Sun*.

MORE RESEARCH DONE IN TUBERCULOSIS THAN EVER BEFORE

P. P. McCAIN, in the *Sanatorium Sun*

Never before in the history of tuberculosis research work have so many, public health, university special laboratories and manufacturing chemists been so interested in tuberculosis research as today.

The National Tuberculosis Association has a Research Committee who

have succeeded in securing the coöperation of some of the best research workers in the United States. Various phases of the research problems are assigned to students most expert in particular lines of research. Taking part in this program of research at the present time are the Hygienic Laboratory of the United States Public Health

Service, The Bureau of Animal Industry of the Department of Agriculture, the National Research Council, twenty university and special laboratories, and two manufacturing chemists.

Spreading so extensively in man and animals tuberculosis is the greatest disease problem from an economic standpoint that the world has. Every effort

should be made, and is being made now on a larger scale than ever before to use the best the world possesses to cure this disease. The plan of research work of the National Tuberculosis Association expanded over the world ought in a short time enable physicians to secure the knowledge necessary to prevent and cure tuberculosis in any stage.

THE MEDICAL TREATMENT OF TUBERCULOSIS

DR. DAVID R. LYMAN,

Medical Director Gaylord Farm Sanatorium, Wallingford, Conn.

The following paper written by Dr. Lyman, one of the ablest Sanatorium Superintendents in this or any other country, is so true and so well said that it is reproduced here. Also worthy of note is the fact that the medical work at our State Sanatorium is and has been for years conducted just as Dr. Lyman says it ought to be done, and strange to state, the medical staff has been criticised for so doing. Looks like they are in pretty good company, doesn't it? Now that we have splendid county sanatoriums where the same kind and class of work can be done, it is hoped that they will follow suit. Every doctor and every person in North Carolina ought to read this paper. The paper follows:

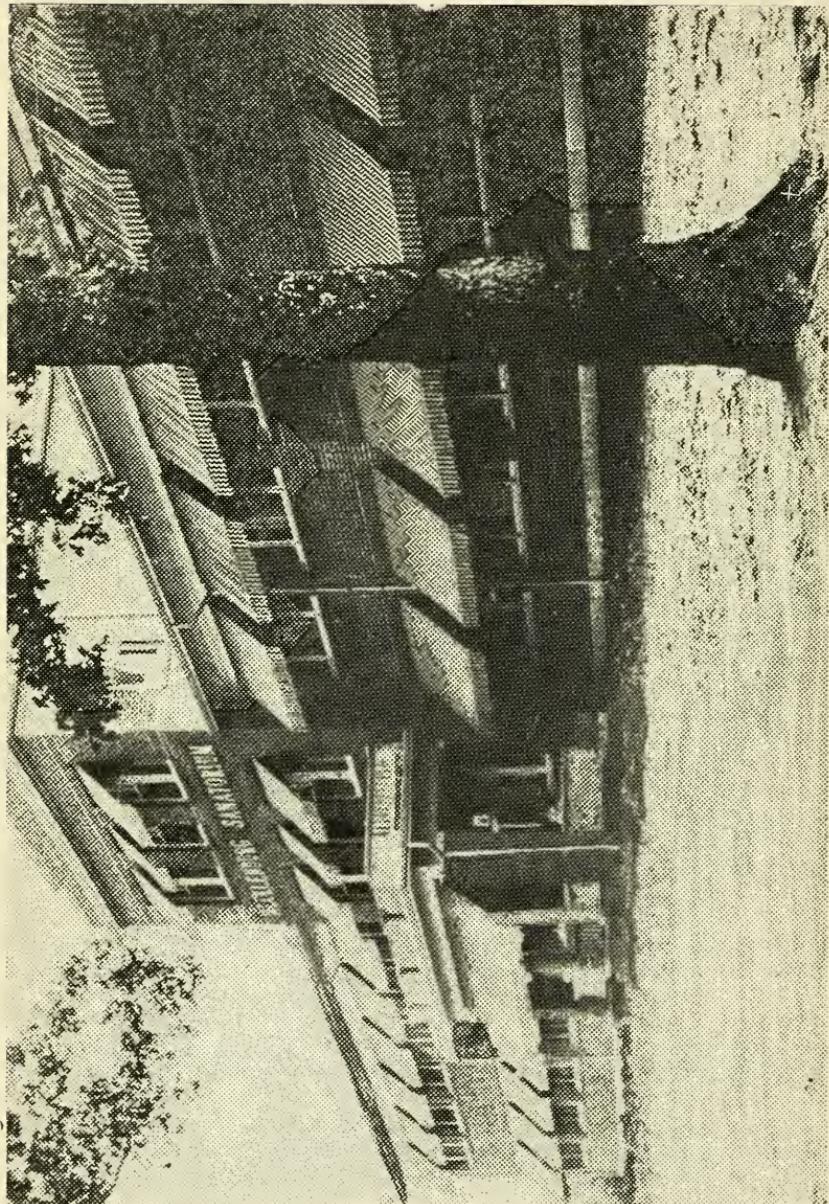
"I shall make no attempt here to summarize for this audience the results of the various treatments applied in recent years to cases of tuberculosis either for expected cure of the disease itself or for relief of its distressing symptoms.

"I have interpreted the title given me as having a much broader scope than that and as affording opportunity at this time to emphasize to the governing boards of the many institutions treating tuberculosis throughout our country, the responsibility which they have assumed for the proper treatment of those entrusted to their care, and the manner in which this responsibility is being at times neglected. Two recent incidents have strikingly illustrated the inefficiency to which I refer and of

which our directing boards and to a lesser extent the sanatorium physicians themselves seem strangely unconscious.

"A case was reported to me where a girl of fourteen had been in tuberculosis sanatoria since the age of six. At that time she had been operated on for empyema and had shortly after had tubercle bacilli in her sputum. At fourteen she had the growth and development of a child of eight. The liver was greatly enlarged, the spleen likewise. the urine was full of albumen and casts and the child was listless and anemic in the extreme. Fortunately for her at this time, she was transferred from her latest tuberculosis hospital to the poorhouse where they had a physician in charge who did his own thinking. He had the child X-rayed, the old empyema wound opened, a large abscess cavity drained and a length of drainage tube removed which had been left in eight years before. The child was transformed physically in the next few months, though the health is permanently impaired. It is a striking example of the routine which ascribes all symptoms to tuberculosis and naively blames all its failures upon the 'lack of resistance' of the patient.

"The second incident was a conversation with a layman who has for years devoted his life to the problem of economic re-establishment of patients returning from the sanatoria. His group of patients are all given careful medical supervision in a special clinic. He was criticizing the sanatoria, and

**MECKLENBURG SANATORIUM**

This is an ideal building from every standpoint, and the County Commissioners certainly got their money's worth. They do need one other thing, and that is a Children's Building. Every county sanatorium should have a Children's Building in connection. Dr. John Donnelly of Charlotte is superintendent of the Mecklenburg Sanatorium.

justly, for their inadequate work; basing his complaint on the number of cases returned to him after six months and more of supposed close medical supervision and in whom the problem of return to work had to be further postponed, often for several weeks, because the physicians at his clinic found badly diseased tonsils, abscessed teeth, defective vision, chronic appendicitis, severe pelvic complication and other troubles that had to be corrected before the patient could ever be expected to reach any real grade of industrial efficiency.

"We have (or *should* have) long since passed the point where we should look upon the medical treatment of tuberculosis as meaning the prescribing for distressing symptoms and the testing out of remedies that are put forth from time to time as 'cures' for the disease itself. Those of us who have studied the histories of our patients have been impressed time and again with the rarity with which tuberculosis appears as an acute or active disease in patients who have been in excellent general health up to the moment of its onset. There are such cases but nearly always we find a history of acute respiratory diseases, or of slow lowering of general vitality from overwork, worry, dissipation or other cause preceding the onset of the tuberculosis. We know that with general health restored and maintained, patients will carry on often with large lung involvement and for an indefinite period. All who have had sanatorium experience of any length are familiar with the case which comes to them for a definite existing tuberculosis but where the symptoms that called attention to it are due to some other cause. I once kept a patient with a moderate apical lesion at bed rest for four months because of a persistent temperature which I ascribed to the tuberculosis. Fortunately for the patient I at last studied her case carefully and cleared up a deplorable condition of decayed and abscessed teeth. The temperature promptly subsided, the patient gained forty pounds and has remained well for fifteen years. The example could be multiplied endlessly from out the experience of any sanatorium.

"We talk and write of the final cure of tuberculosis as being dependent upon the maintenance of a reserve of general health and resistance by the patient. We caution them as to their mode of living after they return home; as to the need of maintaining their general health at the highest possible level. We devote a large part of our work to trying to insure them proper living and working conditions. These are, of course, essential, but is it not even more necessary that we try during the months they are under our care to seek out and rectify if possible all those physical defects that might undermine the patient's general health? It is a common experience for a sanatorium physician to be asked, 'Don't you get tired of just treating one disease all the time?' Those who ask this, little realize that the sanatorium or tuberculosis hospital presents to its medical staff as good a clinic in minor ailments and in chronic disorders other than tuberculosis as can be found anywhere. We have always to bear in mind that the active tuberculosis in any given case may owe its activity to other trouble in the naso-pharynx, the mouth, the gastro intestinal system, the ductless glands, the blood, the urinary tract and especially the pelvis in women. If we find and cure this secondary disorder the tuberculosis will soon be brought under control, but it will never be brought under thorough control until we do so. My excuse for presenting this paper at this time is that there are still far too many institutions in operation whose governing boards do not realize what the proper medical treatment of tuberculosis really is, who are content to maintain the old-fashioned boarding-house type of institution, employing the cheapest and not the best physician they can procure and then so burdening him with details of administration, outside clinics and educational propaganda as to leave him no time for real medical work. Any man or woman of affairs knows that cheap things are usually the most expensive in the long run and there is nothing so expensive in the end as cheap medical care.

"The great defect in our medical treatment of tuberculosis today lies in

the fact that those responsible for the construction and maintenance of our institutions do not realize this, have not grasped the fact that from the standpoints of medical and nursing care and provision for thorough clinical

study of its cases, the equipment and service of our sanatoria should resemble that of our best general hospitals and not merely a first-class boarding house. Treatment, to be effective, should deal not with the lungs alone but with the entire patient."

FREE TUBERCULOSIS CLINICS FOR SCHOOL CHILDREN

By P. P. McCAIN, A.B., M.D., F.A.C.P.

Director, Extension Department, State Sanatorium

Authorities agree that children are more susceptible to infection from tubercle bacilli than adults. They are also more likely to get the germs into their systems by reason of the fact that they live in closer contact with those in their homes who have tuberculosis and also because they are less sanitary than adults. They play around in the dirt and on the floor, put almost everything that they handle in their mouths, swap chewing gum and often eat without washing their hands.

Tuberculosis does not usually manifest itself the same way in children as in adults. It is more likely to affect glands at the root of the lungs or the hilum than the substance of the lung itself. It also often affects the glands in other parts of the body, the bones, the joints and the peritoneum.

This hilum type of tuberculosis is by far the most common form of the disease in children. It is also difficult to diagnose with accuracy by the ordinary methods of examination because of the fact that the disease is so deeply situated in the chest that it produces almost no definite abnormal physical signs. The X-ray is more essential for a diagnosis in this than in any other form of the disease. Practically all children with this form of the disease can also be cured if it is discovered early and if they are properly treated.

The Extension Department of the Sanatorium working in coöperation with the school and health authorities and the State Tuberculosis Association has been conducting this fall special tuberculosis clinics for children in the

schools. On account of our present limited clinic force it is necessary for us to restrict our children's clinics to those communities or cities where there is a well organized health department, the personnel of which will be able to assist with the clinic. Some of the cities in which we are already working are Concord, Kannapolis, Gastonia and Greensboro. We would like to examine every child in the schools where the clinics are held, but the expense and lack of time do not permit this.

Since we cannot examine all the children we concentrate our efforts on the three groups of children who are most likely to be infected with tubercle bacilli which are as follows:

1. Those who are 10% or more underweight.
2. Those who have other suspicious symptoms of tuberculosis.
3. The known contacts.

Undernourishment in children has a very definite relationship to tuberculosis. An extensive study of this subject has been made in Cattaraugus County, New York, where it was found that from 3.6% of children from 10 to 14% underweight to 25% of children who were 25% and over underweight had tuberculosis. In other words the greater per cent of undernourishment in children, the more likely they are to have tuberculosis.

Other suspicious symptoms are undue fatigue or a tiring after slight exertion, lack of energy or disposition to sit around in the house instead of running and playing as normal children do, nervous irritability, lack of appetite,

fever, enlarged glands, frequent colds, cough, bone or joint troubles. The presence of any of these symptoms is an indication that something is wrong with the child and should be thoroughly investigated.

Children who have lived in the same house with a person who has had tuberculosis or who has associated closely in any way with someone who has had the disease should have a thorough examination whether they have any symptoms of tuberculosis or not. In fact, every person, whether an adult or a child, who has been exposed to tuberculosis should have a thorough examination every year. Early tuberculosis does not always cause symptoms and a thorough examination every year by those who have been exposed would prevent many a case of tuberculosis from becoming advanced before being discovered. After selecting children in these three groups and after securing the permission of the parents for the study to be made the first step is the giving of the Pirquet tuberculin test to all of the children to be studied. This

is a harmless skin test. A positive test shows that at some time in the child's life tubercle bacilli have entered the body—that the child has tuberculosis infection—but it does not necessarily mean that the child has tuberculous disease or tuberculosis.

The main efforts of the clinics are concentrated on the children who show a positive tuberculin test in order to find out whether or not they have clinical tuberculosis. To this end a careful history of each child is taken. A careful general physical examination, including the chest, is made and an X-ray picture of the chest is taken. Physical defects which are found are reported to the parents and they are urged to consult their family physician and have them corrected. In this way those children who have tuberculosis can be treated in time to be cured and those who have tuberculous infection, but no definite disease, can have their general resistance increased to such a degree that they will never be likely to have the trouble.

CASE-FINDING IN CHILDREN

HENRY D. CHADWICK, M.D.,

Medical Director Westfield State Sanatorium, Westfield, Mass.

The following article read before the recent meeting of the National Tuberculosis Association is the most extensive and comprehensive piece of work done in the examination of undernourished children. For several years we have wanted to do this for our North Carolina children, and have been working toward this end as rapidly as the means at our disposal, which also means facilities, would admit.

Now that the State Sanatorium has its children's building nearing completion, and the Superintendent, Dr. McCain, through his extension department is conducting clinics throughout the State for the examination of children, and a number of the health departments are conducting clinics, and the North Carolina Tuberculosis Association is featuring work for the undernourished or underweight child there

are only two things needed—a largely increased appropriation to the extension department of the State Sanatorium and a largely increased Christmas Seal Sale in the State, a small percentage of which supports the State and national tuberculosis association work. The paper of Dr. Chadwick follows:

"Two years ago the Massachusetts Department of Public Health began what is termed its 'Ten-Year Program.' Its primary purpose was to find the children who showed some evidence of tuberculous disease. Its objective was to prevent the onset of pulmonary tuberculosis in later years by the early recognition and treatment of the children while the disease was yet in the glandular stage.

"Experience at the Westfield State Sanatorium over a period of fifteen years with the care of tuberculous chil-

dren and some work which we did in 1920 in examining underweight children in the schools in Westfield and other Hampden County towns showed that there probably was some relationship between malnutrition and tuberculosis.

"It would, of course, be desirable to examine all children for evidence of tuberculosis, but as that was too comprehensive a plan to be practical, it was decided to examine only the following groups:

"Children 10 per cent or more underweight for height.

"Contacts—Those known to be exposed to human tuberculosis in the homes.

"Specials—Those not in either of the above-named classes, but who were known to be in poor health.

"This plan reduced the number to be listed for examination to about 15 per cent of the school population in the elementary grades. The High Schools were not included in this survey.

"After the lists were made out, the local nurses visited the parents and obtained a signed request for the examination. The consent was thus given for the examination of the chest, a tuberculin test and an X-ray. At the same time the family and personal history of the child was obtained.

"The first year the clinic personnel consisted of seventeen persons. Of these, five were physicians, one of whom acted as Chief of Clinics, and the other four as Examiners; three Nurses, one of whom acted as Advance Agent in the Field Work; four Stenographers, two of these worked in the field with the clinics and two wrote the reports in the office; four Nutritionists, who interviewed the parents who were present with their children; and one X-ray Technician with a portable machine took the films in the buildings where the clinic was held.

"Examinations were made in the school building selected by the local school authorities. It was planned to work only during school hours. One hundred and thirty children were scheduled for a day's work. This number had to vary somewhat, according to the number of children to be examined in the school district. The children from the smaller schools were

taken to the larger central buildings. The local School and Health Department Nurses aided in getting the children to the clinic.

"The children were stripped to the waist and a cape was thrown over their shoulders while waiting. They were then weighed, measured and the temperature taken. The physician examined the teeth and tonsils, looked for evidence of adenoids, goitre, enlarged cervical glands and heart murmurs, then examined the lungs by auscultation and percussion, paying special attention to interscapular region for evidence of diseased mediastinal glands. The findings were recorded on the Clinic Record Sheet. From his physical examination the physician noted that, in his opinion, it was a Suspicious or a Negative case. No more definite diagnosis as to tuberculosis was made by him. The Von Pirquet Tuberculin test was then made, using full strength old tuberculin obtained from the Saranac Laboratory. On the third to the fifth day the children were again seen by one of the physicians and the results of the test were recorded. A list was made of the reactors and as soon as possible thereafter an X-ray film of the chest was taken.

"The diagnosis was arrived at by the consideration of the history, symptoms, physical examination, tuberculin test and X-ray and the elimination of other conditions simulating tuberculosis. The standards for diagnosis as recently published by the National Tuberculosis Association in its seventh revision were used in classifying all the tuberculous conditions that were found.

"A report of each examination made was sent to the parents, giving in detail any pathological condition found, with the recommendation that they consult their physician for advice and treatment. A copy was filed with the Board of Health, the Superintendent of Schools and the School Principal, so that the Public Health Nurses could follow up the children found to be in need of special attention.

"Commenting on the first year's work, we note that 17 per cent more girls than boys were listed for examination. This must mean that more girls are underweight than boys and taken in connection with the fact that the death

rate for girls is much higher in the age group 10 to 19 may have some significance as indicating that malnutrition furnishes good soil for the development of tuberculosis.

"The percentage (28.5%) of reactors is lower than anticipated and would indicate that there is much less infection now than statistics have shown to be the case in former years. The percentage of reactors (28.8 in urban and 28.3 in rural children), is practically the same, but when we deduct the contact cases, the figures change to 24.1% reactors for the whole group examined and 36% reactors for the rural children.

"Only glands large enough to be visible were tabulated. Of 614 children with visible glands, only 32% reacted to the tuberculin test. This shows that enlarged cervical glands are more often caused by other infections than tuberculosis. It is noteworthy, however, that 11% of the rural reactors had enlarged visible glands and but 6.3% of the urban children. The 12% more reactors among the non-contact rural children and that 5% more with enlarged cervical glands, who reacted to the tuberculin test, may mean the greater prevalence of bovine infection

in the small communities where but little of the milk is pasteurized.

"The results of the second year's work, when nearly 20,000 were examined, have not been tabulated in detail as yet, but the figures, as far as shown, vary little from the percentages shown during the first year. It is remarkable that the percentage of reactors (28.5) is the same for 10,000 children examined the first year as for the 20,000 examined the second year.

"The number of Hilum Tuberculosis cases for the first 10,000 was 5%. For the next 20,000 it was 3.3%. The suspects, which represent those children who reacted to the tuberculin test, but did not have enough of the cardinal points necessary for a positive diagnosis, was 12% the first year and 7% the second year.

"Pulmonary Tuberculosis is, as we expected, comparatively rare. During the first year, 26 cases were found, or one in 384 examined. Only one of the 26 found was in a rural community. The second year, only 19, or one Pulmonary case in a thousand was discovered. Of these, but three were found in rural communities."

THE TUBERCULOSIS SITUATION IN NORTH CAROLINA

Tuberculosis has lost its premiership in the matter of killing our people, being exceeded now by cancer, heart disease, and pneumonia in the order named. This is caused, not so much by the small increase in the number of deaths from the three diseases mentioned, as by the tremendous decrease in the number of deaths from tuberculosis, which as an average for the United States has been reduced to a little more than fifty per cent in the last twenty years, and for our own state, to fifty per cent in the last eleven years.

Tuberculosis however, continues to be the most expensive of all diseases on account of the long, continued invalidism which precedes recovery or death, and in case of recovery, the longer decreased producing power of the person once ill with the disease. In fact, it is claimed by some that tuberculosis costs the people of the United States in actual money and economic

losses more than all other preventable diseases put together. Tuberculosis then, comes in for a most important part when we come to consider the economics of health and diseases and the matter of life and death.

Our people are fast arriving at the place where they, along with the most enlightened physicians and scientists of our day, consider sanatorium treatment as a necessity in the proper treatment and education of the tuberculous patient. Likewise, they are becoming informed in regard to the fact that tuberculosis is transmitted from one person to others by means of the tubercle bacillus, which is thrown off from the lungs of the patient through the mouth in coughing, sneezing, and expectorating without the proper regard for placing a screen in front of the mouth and nose, as for example, gauze, handkerchief, paper napkin, etc., and expectorating into a sputum cup rather than on the floor or sidewalk, the

sputum later being incinerated in a kitchen stove or other place.

There are two things however, that our people have as yet gotten above their horizon of thought only in part:

(1) That every case of tuberculosis should be found and be under the supervision of doctor and nurse, both before and after sanatorium treatment. The Public Health Nurse, in the county health department or otherwise, is more suitable for this work than the ordinary R. N.

(2) That we have in our schools and homes a large number of undernourished children perhaps twenty-five or thirty per cent, and that these children are potential candidates for tuberculosis, as indeed they are for all diseases that afflict our people, from disease of the skin to diseases of the mind.

It was recently found in some work done by the North Carolina Tuberculosis Association among undernourished children in this State, that a boy was pilfering, in fact was guilty of larceny repeatedly, and that he was headed directly and swiftly for the penitentiary; in addition he was a regular "bad boy." His teachers could not control him, he made poor grades in his studies, and was failing to be promoted. The only trouble with this boy was that he was undernourished, and when this was corrected, he became literally, physically and mentally transformed. He ceased to steal, he gained in weight, his eyes became brighter, he became the typical "good boy," he ceased to trouble and annoy his teachers, and in less than eight weeks stood at the head of his class and was headed straight to make the "good citizen." This is our desire for every child in our fair State.

Which is better, to spend that few cents, comparatively, necessary to teach such a child the habits of right living, give him proper nourishment at the proper time and in the proper way each day, and make a good citizen out of him, or procrastinate, plead false economy, and then spend thousands of dollars prosecuting this boy in the courts, keeping him in jail and in our penitentiary? The question answers itself. But this question must become personal: Are we club women taking an intelligent interest in this thing, or are we procrastinating, just telling

these boys and girls to go on to crime and prison or to disease and death?

The North Carolina Tuberculosis Association has taken for one of its major objectives the undernourished child, or differently phrased, "the salvaging of the undernourished child and keeping the well child healthy." Could not your club interest itself in this thing, confer with your health department, if you have one, and your department of education, local and county, and interest them in this work? If additional information is desired, write the North Carolina Tuberculosis Association, Southern Pines, N. C., and they will gladly assist you.

You all know that the North Carolina Tuberculosis Association and the National Tuberculosis Association are supported by the sale of Christmas Seals each year, and that the women's clubs of our State and every other state are deeply interested in this Seal Sale and in many places assume the management of the sale and direct the use of the local percentage derived therefrom. We have been very successful in this, and last year, I understand, the total receipts from the sale of Seals in our State amounted to between fifty and sixty thousand dollars.

In regard to what this work has meant to our State let me give an example:

About 1916 the health department of the Woman's Club of Raleigh, coöperating with the North Carolina Tuberculosis Association, which furnished both advice and funds, brought the first Public Health Nurse into our State. This was also probably the first Public Health Nurse in the United States, for the term was coined just before this by the North Carolina Tuberculosis Association and the National Nursing Organization. After public health nursing had been demonstrated in Raleigh for nearly two years the North Carolina Tuberculosis Association made this same nurse "State Director of Public Health Nursing." This was a most successful piece of work, and in 1919 this same nurse was turned over to the State Board of Health to become chief of its Bureau of Public Health Nursing, which was created at the time, and on the suggestion of the North Carolina Tuberculosis Association.

The National Tuberculosis Association has close connection with each and every state tuberculosis association, and each state tuberculosis association has a director on the National Tuberculosis Association Board of Directors. The total receipts from the Seal Sale throughout the United States was five million dollars for 1925. Of this amount the National Association receives five per cent plus payment for all Seal Sale supplies and all other supplies which they furnish, amount to seven to ten per cent more.

Isn't it delightful to be engaged in and a part of such a fine and great work?

Is it too much to express the hope

that each member of our Federated Women's Clubs will take a personal interest in this work, at least to the extent of doing her bit in the annual sale of Christmas Seals from Thanksgiving to Christmas, and informing herself on our problem of the undernourished child and on child health education?

And, if the writer can be of any service to any individual members or any club she will be humbly grateful for the opportunity.

MRS. CHARLES R. WHITAKER,

Chairman Tuberculosis, N. C. Federation of Women's Clubs and Vice-President North Carolina Tuberculosis Ass'n.

TO RID WORLD OF TUBERCULOSIS, "START WITH THE CHILD," SAYS EXPERT

That little round copper piece we call a cent has come to have a new significance to me since I discovered the marvelous work against tuberculosis that your pennies and mine, combined with millions of other Christmas Seal contributions, are supporting.

If Chicago's impressive Wrigley building is striking evidence of the possibilities of a penny, what a monument to its power is the unceasing campaign to make health for all a reality!

This new and growing respect for the one-cent piece is the result of my assignment to write a series of articles on the Christmas Seal work. This article is devoted to just one phase of the Christmas Seal educational campaign—work in the schools.

"If we are ever to get very far in our efforts to prevent tuberculosis, the most promising place is to start with the school child." With these words the State association's executive secretary launched into an enthusiastic description of school activities.

He told me of the Modern Health Crusade, which the association is conducting. The Crusade is a plan for teaching health by doing. Titles are awarded children for successfully carrying out eleven health chores daily. Millions of health chore folders have been distributed to North Carolina school children. In many schools the plan forms a part of their year-round health instruction and regular school credit is given.

"Here is a book we have sent to

thousands of schools as an aid to the teacher and as a stimulus to her to have health instruction correlated with other subjects."

The book is entitled "Health Training in Schools," by Miss Theresa Dansdill, State Director Health Education, North Carolina Tuberculosis Association, and, as I glanced through the chapters on games, plays and other interesting health projects, in which children would delight, my mind went back to the dull, stereotyped physiology and hygiene instruction of my school days, which happily are no more. I mean, of course, the stereotyped physiology and so-called hygiene.

The most vivid and painful recollection was that of an effort to memorize step by step the circulation of the blood through the system. It was all theory and no practice in those days, and, if the pupils could accurately trace the circulation, it mattered little whether a desire for pure, red blood, or knowledge of how to build it, was obtained.

That thousands of pieces of health literature and posters are sent to the schools each year was further information I obtained. These included weight and height measuring charts, correct posture and teeth folders, health chore pictures and other material.

Supplementing this general educational work, many counties have special school activities financed by Christmas Seals. These include nutrition classes, milk lunches, medical examinations, dental clinics and school inspections.

COUNTY TUBERCULOSIS ASSOCIATIONS

There are twenty-one county-wide Seal Sale organizations in North Carolina this year; that is, twenty-one organizations working with the whole county as a unit in putting over the 1926 Tuberculosis Christmas Seal Sale. In such communities, the seventy-five per cent of the receipts retained is disbursed from a central fund, being spent where the most good can be accomplished. This is almost the ideal manner in which to conduct the Seal Sale.

The ideal way is to organize the county into a county tuberculosis association, according to the rules set down and approved by the National Tuberculosis Association and the State Tuberculosis Association. Of this type, we have six, which are listed below. These

associations are organized in the accepted way—they have a set of officers, a board of directors, etc., and each year they appoint a county Seal Sale Chairman, who in turn has his or her sub-agents located in the various towns of the county.

Cabarrus—Cabarrus County Tuberculosis Association.

Cumberland — Cumberland County Tuberculosis Association.

Moore—Moore County Health and Welfare Association.

Nash—Nash County Tuberculosis Association.

Wayne—Wayne County Tuberculosis Association.

Wilson—Wilson County Tuberculosis Association.

HON. W. N. EVERETT TAKES UP PHILANTHROPIC WORK FOR N. C. TUBERCULOSIS ASSOCIATION

Honorable W. N. Everett, Secretary of State, has accepted the appointment of State Seal Sale Chairman for the coming Tuberculosis Christmas Seal Sale which is conducted from Thanksgiving to Christmas.

Mr. Everett says that he has for many years appreciated the Seal Sale and the splendid and wonderful work done by the State and national associations, and he is glad to render any service possible in this worthy cause.

The most outstanding and comprehensive piece of research work in tuberculosis is on the tubercle bacillus and is being done at this time by the National Tuberculosis Association. This is done in a coöperative way by using the best laboratories and scientific workers in this line, connected with our leading universities, and is financed by grants from the National Tuberculosis Association. At the same time they are securing the coöperation of the leading sanatoriums of America in clinical research which is a very necessary part of the program. The North Carolina Tuberculosis Sanatorium is included in this last. For years the North Carolina Tuberculosis Sanatorium has conducted clinical research and is glad to join in this nation-wide movement. This clinical research not only proves or disproves new discoveries in laboratories

or elsewhere, but it assures the patients of more careful and thorough examinations and better treatment.

Among other things, the North Carolina Tuberculosis Association is doing a most important piece of work in health education. This, being interpreted in concrete language, means teaching the child proper health habits in order that he may remain healthy, and training the undernourished child in nutrition classes in order that he may become so. In some class rooms one hundred per cent of the children have reached a normal state of nutrition while in a school of five hundred, ninety-six per cent were successful. It is felt that the proper nutrition of our children is the most important thing before our people.

The many friends of Mr. Everett throughout the State and elsewhere will be delighted to know that his health is greatly improved, and that he is fast regaining his old-time vigor, so much so that he feels able to take up this philanthropic work for the North Carolina Tuberculosis Association.

St. Matthew's Gospel 25:40:

"And the King shall answer and say unto them, Verily I say unto you, Inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me."

WHAT ABOUT YOUR CHILD?

Is My Child Defective?

It is "human nature" to overlook faults in our own offspring. Disagreeable statistics on the subject of human imperfections do not impress us much, as we always apply them to other people, but our children are likely to be the average of children the country over. There is no escaping the fact that among 100 children in city, town, or country, about 10 need glasses; it must be taken into account that two or three are more or less hard of hearing, that four or five have no nose so far as use is concerned (and noses are essential for healthy breathing); that five or more have worse than useless tonsils; that 10 of them stoop like an old man, and that at least 50 are the proud possessors of rotting teeth; comparatively few are properly fed, and many are seriously malnourished. We are speaking of the child of school age, but more than half such defects are present before he enters school. Maybe your children do not belong to the multitude of those needing some correction of defects or of habits, but it is well to make sure and to remain sure.

Health Examination

Those parents are fortunate who can frequently have the services of a physician who knows about rearing healthy humans as well as about treating sick ones.

A child is infinitely the most complicated as he is the most valuable machine in the world, and it is a simple matter of economy to have him looked over periodically, say on his birthday, to see that he has no loose screws or defective parts, and that he is rightly fueled and oiled, just as one would do with such a comparative trifle as a \$5,000 automobile.

When it comes to health examinations in schools, the parents should be interested to see that the physician is not chosen because he is cheap or needing a job. The salary should be worthy of his position, and should at least equal that of a skilled garage machinist.

It goes without saying that the examination should be thorough and not

a mere hasty "looking over" or inspection. This takes time and costs money, but should even an hour or two and the cost of a new hat be considered too much outlay in time and money on such a valuable machine? If the child should need to repeat his year's work on account of physical disability, it will cost some one from fifty to a hundred dollars, besides the loss of time of teacher and pupil and the vexation of the parent. If we really believe health to be as valuable a thing as we say we do, the physician who directs the health work of the schools should be paid accordingly.

Much of the physical examination of school children can be done with advantage by trained teachers or by nurses under the supervision of the school physician. In fact, the teacher who does not know whether the child under her care sees or hears or breathes or otherwise behaves normally will, at a no distant date, be considered as incompetent and absurd as a seamstress who does not know whether her scissors are sharp, or a professional musician who does not know whether his instrument is in tune. We are no longer attempting in school to direct the progress of bodiless minds.

Is He Growing?

Many fathers are keenly interested in the development of their pens and hogs. They know almost to an ounce whether such livestock are thriving, and they manage their feeding with scientific nicety, but they do not know whether or not their children are runts. Many mothers take pride in the growth of their plants; have a keen eye for signs of drooping or disinclination to bloom, and they sun them or change the soil with the most solicitous care. At the same time the children of the family may be paling and withering under their eyes, and they do not observe anything unusual.

The chief business of the child is to grow, and his healthy growth is of more importance than that of droves of hogs or acres of orchids.

The measuring and weighing of children have been fundamental features of school health work for the very

good reasons that (a) they give us fairly accurate guides as to the child's rate of growth, and (b) because the child is immensely interested in his measurements, which serve as pegs on which to hang health lessons and establish healthful habits. The height and weight of the child at any age depend considerably on heredity, but progress in growth takes place in all. There is some seasonal variation in growth, and it takes place more rapidly at certain age periods. There may be progress only in height or only in weight for a short season, but neither is at a standstill for long. The school child should be weighed and measured at least every 6 months; the child from 3 to 6, every 3 months; and the child from 1 to 3 every 2 months. A child from 3 to 14 who does not gain at least 2 inches in height or 3½ pounds in weight every year is not keeping up with the average, and in some years his increase should be very much greater.

A child who is thin or under the average weight for his height may sometimes be so from hereditary causes, but he should be examined most carefully for defects of body or of habit before deciding that this is a family trait. The child who is excessively fat also deserves special study. We are interested in raising healthy, vigorous children rather than those of standard dimensions, but variations from the average should cause us to make sure they are not abnormal. A child who is free from disease and defect, properly fed, sunned, cleaned, clothed, and exercised (but not over exercised) can be trusted to grow as nature intended.

Is He Well Nourished?

We hear much these days about malnutrition, and it is very common. Just

how much of this is due to hereditary tendencies, to omissions and commissions on the part of our ancestors, to racial blunders, and how much is due to faults of feeding in the present generation, including prenatal days, we do not know; but we must begin improvement as best we can in the present, though the immediate results may not be all we could wish. We mean by malnutrition not simply that a child may be undernourished, but that there may not be good stuff in his tissues as indicated by other signs than those of weight; in other words, that he is not healthy. A child may weigh what we should expect him to weigh and yet be badly fed. It has been estimated that one-third of our school children are malnourished, and judging by their teeth the proportion is much higher.

"In a land literally flowing with milk and honey several million children in the public schools suffer from malnutrition," and just as large a proportion of children who have not yet entered the schools are in like condition. This could hardly be otherwise since "there is good reason to believe that not only the children but all the adults of the country suffer from some degree of dietetic error."

Faulty food and feeding do not have everything to do with malnutrition, for physical defects may be to blame, and overfatigue and other conditions affect the use of food.

In many schools special work for the undernourished has been carried on. They are told what to eat, given extra meals, and made to rest for certain periods. Not much progress can be made, however, without the help of the home.—Health Education Series No. 19 Bureau of Education Department of the Interior.

IS YOUR CHILD SAFE?

Tuberculosis Infection and Undernourishment

The number which was graded as being undernourished and underdeveloped progressively increases in proportion to the increase in age, from the 7 year age group upwards. This is particularly apparent in the boys while in the girls

there is comparatively little variation in undernourished and under developed conditions in the different age groups.

One thousand eight hundred and eighty-four were given Von Pirquet tests. 32.2% of these tests have a positive reaction. A Von Pirquet test is a skin test which indicates whether there

is tuberculous infection in the body or not. If it is positive, it does not mean that the individual has active tuberculosis. It does indicate that there is a tuberculous infection in the system although it may be latent and inactive. Its value is found in the fact that it points out those children in whom there is already tuberculous infection and who are thus more susceptible to a break down from the disease.

No connection was observable between those children who had tonsil and adenoid difficulties and those children who had a positive Von Pirquet.

There seemed to be a relationship between those children who had a positive Von Pirquet reaction and those who had cervical gland involvement.

A greater proportion of those children who were undernourished and underdeveloped had positive Von Pirquet reactions than did those children who were in a normal physical condition. This means that when there is a latent infection together with a bad physical condition in the same individual that there is less resistance to an active outbreak of tuberculosis when in later life a social, economic or medical break may occur.

Children of Tuberculous Homes

Tuberculosis being an infectious disease, the first and by far the more important group to be dealt with is that of the contacts. In this study, this group includes only children continually exposed to open cases of tuberculosis. That a large number of these will ordinarily develop active tuberculosis is a recognized fact. In this study 62.5% of the contacts have a positive Von Pirquet reaction as against 30.9% of the noncontacts—more than double.

Of the contacts, 75% of those who were undernourished and underdeveloped have positive Von Pirquet reactions as against 63% of the contacts who were normal physically.

47.6% of the noncontacts who were undernourished and underdeveloped have positive Von Pirquet reaction while those with normal physical condition only have 28.6% positive reaction. These facts seem to verify the theory medical men have had for years that those children who are undernourished and underdeveloped are more susceptible to tuberculous infection.—Tuberculosis Society of Detroit and Wayne County.

WAS YOUR CHILD IN THESE CLASSES?

The following classes in the schools of North Carolina won pennants distributed by the National Tuberculosis Association, New York City, for superior work in acquiring good health habits.

Pitt County

Stokes School, Grades III and IV, Miss Lillian Spence; Grades V and VI, Miss Margaret Bullock.

Garner

Turner School, Grades I, V, VI, Miss Helen Farabow.

Thomasville

Thomasville School, Grade II, M. Bailey; Grade III, M. Ray; Grade III-A, Maurine Long; Grade III-B, E. Pearce; Grade III-B, Helen Smith; Grade IV-A, Gladys Norris.

Wadesboro

Wadesboro School, Grade II-A, Mabelle Nall; Grade III-A, Julia Cameron; Grade III-B, Kate Mor-

gan; Grade IV-A, Irene King; Grade IV-B, Mamie Guldedge.

Asheville

Ashland School—Irene Logan, Clara Childs, Marie Baleman.

Aycock School—Elenor Kidd, Florine Simpson, Mildred White, Addie Lou Hudson, Mrs. J. R. Bigham, Elizabeth Ray, Constance Garrett, Annie Glenn.

Burton Street Colored School—4 classes Lonny Powers, 2 classes Gladys Young, 3 classes Hattie Love.

Claxton School—Louise Connnelly.

Montford School—Maggie Turner, Burey Boyce, Nan Deason, Avis Pratt, Corinth Baker, Mamie Stallings, Eugenia Harrison, 2 classes Hattie Riggs.

Murray School—Stella Chaney, 2 classes Sue McKittrick.

Newton School—Alleen Ward.

Park School—Eunice Sailors, J. W. Fuller, J. E. Withers, L. Spiukle.

Vance School—Ruth Johnson, Ellenor Galphin, Opal Archer, Mrs. L. Y. Biggerstaff, Blanche Rue, Hairleen Hatchell, Mrs. Katharine Formwalt, Grace Matney, Mrs. L. J. Braakshire, Edna Toney, Sara Nixon.

Ayden

Ayden School—Viola Gaskins, Elizabeth Johnson.

Cary

Mt. Vernon School—3 classes Mrs. R. E. Harris.

Chapel Hill

Orange County Training School—Miss D. B. Boaz, Miss P. E. Dargan, Miss R. N. Powell, Mrs. L. M. Bozeman, Miss W. M. Ramsey.

Durham

Bragtown School—Mrs. O. F. Ross, Mrs. I. M. Williams, Mrs. E. B. Roberts, Miss Kathryn Evans, Mary Carlton, Henry Pickett.

East Durham School—Mattie Woodward, Flora Whitesell.

East End School—Earline Pulley, M. E. Trice, N. G. Cooper, Annie Kirby, E. D. Mickle, L. L. Page, B. L. Sparkman.

Edgemont School—Mrs. Patty Heflin, Mrs. L. L. Barnes, Mrs. Katherine Pierce, Ardelle Cogbill, Fanny Speed, Elizabeth Aldridge, Ruth Early, Ruth Wilkinson, Mollie Speed, Eugenia Bradsher, Mary L. Cole.

Fuller School—Myrtle Albright, Minnie Cannady, Lois Sweeney, Alice Merril, Bessie Pullian, Madeline Knight.

Hillside Park School—G. E. Lee, L. A. Royster.

Lakewood School—Daisy Rogers, Mrs. A. H. Yearby, Sallie Vickers.

Magnum Township High School—4 classes.

Morehead School—Margaret McGary, Laton Royster, Mrs. R. C. Craven, Eleanor Whitaker, Bertha Matthews, Mary Cannady, Elsie Beaver, Mrs. B. S. Skinner.

North Durham School—Mrs. Bess Pickard, Patte Jordan, 2 classes Nelle Piper, Mrs. Mary Williams, Helen Brown.

North Side School—Jean Holemann, Lucille Massey, Earle Timberlake, Eunice Jones, Lily May Stanford.

South Side School—Ethel Monroe, Julia Faucett, Mrs. Elizabeth Phillips, Mrs. D. W. Sorrell, Mamie Halloway, Mrs. W. D. Murray, Irene Hicks, Clara O. Petty, Maybelle Kearney, Mrs. J. M. Emery.

Watts Street School—Elizabeth Gray, Elizabeth Walker, Nelle Piper, Mary Williams, Helen M. Brown, Mrs. C. C. Warren.

White's Cross Roads School—Mrs. Opie Walker, Mrs. Annie Parrish.

Salisbury

Henderson School—Mrs. John Seaber, Mrs. Eva Harris, Lottie Venters, Sarah Dorton, Miss Earle, B. B. Kessler.

Innes School—Sue Lee Keown, Beulah Foster, 2 classes Blanche Ingram, Pauline Peeler, Louise Robinson, Jimmie Blanchard, L. Gaston, M. Ector, Miss Duncan, Bessie Elton.

Wiley School—R. Norwood, A. Sherwood, Clota Edwards, Mae Baker, Janie Lee Stovall.

North Carolina led the southern states in pennant winners the past year.

Shall we lead the nation this year?
IT CAN BE DONE.

North Carolina	180
Oklahoma	148
Florida	145
Texas	131
Alabama	82
South Carolina	19
West Virginia	13
Tennessee	1
Virginia	0

If every man and woman in the United States were familiar with the manner in which tuberculosis is communicated and the simple measures necessary for their protection, not only might we expect a great diminution in the death rate of the disease, but the people would soon demand and easily obtain effective legislation for its prevention and control.—DR. EDWARD L. TRUDEAU.



Give Every Child a Fair Chance

HEALTH EDUCATION, which means training the child in proper health and food habits, and bringing the child up to and keeping him in a proper state of nutrition, free from all disease and physical defects, is the most important thing in a child's life. The North Carolina Tuberculosis Association, Southern Pines, has taken this for one of its major activities, and it is spreading rapidly over the State. Write them for further information.

Out of the experiences of childhood is developed the character of the grown man or woman. From injustices done in early school days may come a lifetime of unhappiness. If a child is made to feel that he falls short of other children in his class room, he will carry something of that impression throughout the remainder of his life.

Perhaps you yourself were one of these children who were victims of misunderstanding. Perhaps you were classed as inattentive, when some defect of sight or hearing was really to blame; or rated as stupid, when the fault was your physical condition, not your mental sluggishness.

Will you willingly let any other child suffer such experiences, when it is in your power to prevent?

Give every child a fair chance. Find out if he is underweight—undernourished—falling behind because of physical handicaps.

It is an easy matter to get this information. With a Fairbanks School Scale in every school, you can quickly get a record of the height and weight of every child. From our tables of normal weights and heights you can easily discover whether the child needs further care or building up, and can start him on the highroad to good health and normal mental activity.

It is a little thing to do—but it influences the whole life of a human being.

Why not give every child his chance?

You can build an enviable record for your school, and the Health Officer for his department, by broadening the scope of the work you do for the children. You can establish higher scholarship by building up the physical condition of every under-par child. And you can make your school a more vital factor in the whole community by practical lessons in health-building.

Many schools now weigh every child. If the record shows that it is undernourished, proper forms of exercise,

periods of rest and rations of milk or other weight-building foods are prescribed during the school hours. The results of such work are remarkable; both in the good done for children who might otherwise go through life handicapped by unnecessary physical drawbacks, and in the gratification which results from improving the health standards of the whole community.

The only equipment which you need for keeping these weight records is the

Fairbanks School Scale, generally recognized as the standard of weighing accuracy. One of these scales should be on each floor of every school, in the locker room of every gymnasium, in the office of every school nurse, and in every doctor's office. The North Carolina Tuberculosis Association, Southern Pines, N. C., can furnish these scales at \$25.00 plus freight. Write for height-weight-age charts, and order a Fairbanks Scale today.

SALVAGE THE UNDERNOURISHED CHILD— HOW ABOUT YOURS?

HEALTH EDUCATION

Getting rid of bodily defects is only the beginning of health work. So far we have only been examining, and making needed repairs. We may have a machine made of the best material and perfect in its parts, but it will not run well without plenty of good fuel and oil, and frequent cleaning. Moreover, the human mechanism must always be given opportunity to renew its batteries from day to day by rest and sleep.

HEALTH HABITS

The school desires not only to work with human machines which have the minimum of hampering defects, but with those which are kept clean, well fueled, and well oiled each day. The parents, if they will stop to think, also desire this—for under such conditions it is evident that their children will not only do better work at school, but will develop better in every way, and be happier and less difficult beings to deal with in the home. The well-fed, well-rested child is bound to be better natured than the ill-nourished and fatigued one, who deserves to be excused if he is often fretful and intractable. So are adults under similar circumstances.

The school is trying to get children, especially young children, into ways of health, not simply by presenting them with information, but by teaching them and persuading them, as best they can, to do the few essential things

necessary for health. These few essential practices are so often neglected in the home, where they should have been taught and supervised from birth, that the school has found it a matter of economy to do this in order that the children may profit as they ought by the work of the school.

These "health habits" must, however, be carried out chiefly at home, and the school finds it difficult or impossible to secure their practice without the full coöperation of parents.

The younger the children the easier it is to shape their habits, and parents should begin such training as early as possible, though it is never too late to accomplish something along this line.

WHAT ARE HEALTH HABITS?

Health habits are as old as the hills. They have been essential for health for ages, and their faithful practice has kept the wild animal in an enviable state of physical perfection. Human life has become so complicated by our many "discoveries" and "inventions," and there is such a variety of choice of conduct, that children require supervision and guidance in their daily program, in order that the doing of the few things which make for health may become regular and habitual.

THE ESSENTIALS FOR HEALTH

The habits essential for health may be briefly outlined as follows: (a) Eating the right foods at the right time;

(b) sleeping until fully refreshed and taking needed rest between times; (c) breathing pure air; (d) seeking the sunlight; (e) vigorous use of body and mind; (f) regular use of the toilet; (g) keeping clean without; and (h) keeping in good humor.

Such habits are simple and easy enough for the child at any age, if conditions for their practice are forthcoming through parental coöperation and encouragement. He may learn from his teacher what he should eat and when, but if the parents are not willing to furnish these things at the proper time the effort of teacher and child go for naught. Conditions for comfortable sleep must be supplied by the parents; the child can only observe the adage and go "early to bed." There must be access to pure fresh air if the child is to breathe pure air; and opportunity for muscular and mental play and the means for cleanliness must be at hand if the child is to exercise and to keep clean.

An atmosphere of cheerfulness and of appreciation must exist in the home if the child is not to be unduly depressed, bored, or rebellious.

Health habits are the same at all ages and the adult who is helping the child to acquire them may not find it too late to mend his own ways at the same time.

If the child or adult, in whom correctable defects and diseases have been removed, practices these habits consistently, we can feel assured that he is as healthy as his heredity and the effects of the gauntlet of infectious diseases and accidents through which he has passed in earlier life will permit him to be.—From Health Series No. 19 Bureau of Education Department of the Interior.

TUBERCULOSIS DEATHS BECOMING FEWER

The number of deaths annually from tuberculosis in our State show a decrease for 1925, notwithstanding our steady gain in population. If we could lop off about 350 deaths that occur at Oteen and the various other sanatoriums in Asheville, we would really have a much more respectable figure than the way it now stands, but including these our total death rate for

all forms of tuberculosis is eighty-nine per one hundred thousand for 1925.

The counties having a rate above one hundred are as follows: Buncombe, Chowan, Craven, Dare, Durham, Edgecombe, Forsyth, Granville, Hoke, Lenoir, Macon, Northampton, Pender, Pitt, Richmond, Scotland, Wake, Wayne, Wilson. It is well to remember that in order to get the actual death rate, or the actual number of deaths in a county, it is wise to take the number of deaths over a period of three to five years. However, the figures presented on the back cover page are the figures for 1925.

It would be well for the counties having a death rate above the average, to wit: above eighty-nine, to investigate the matter and go about building a county sanatorium.

Read the exhibit, and see where your county stands.

TUBERCULOSIS SUNDAY

Tuberculosis Sunday was observed in many, many churches in North Carolina, November 28, 1926.

The following prayer was suggested for use on that day: O Lord, the Giver and Source of all power, grant mankind everywhere strength of soul, mind, and body to aid themselves and others in the warfare against illness of all kinds, especially the White Plague of Tuberculosis. Bless the physicians and nurses in their efforts as well as those afflicted, that all may strive together loyally to lessen and finally to eradicate this sore weakness of humanity both from young and old. Move those in health to contribute largely of their means to assist the unfortunate sufferers and to aid in their recovery in every way possible by providing funds necessary for their rest, treatment, and recovery; and may this Universal Christmas Appeal reach all hearts everywhere. We ask it for the sake of those in the valley of the shadow of death, through Jesus Christ our Lord.—(JAMES HENRY DARLINGTON—Bishop of Harrisburg.)

Where are you going Christmas Seals,
With your songs of cheer and winsome
grace,
Where are you going?
To fight a fight with all our might.
To bring good health, gay smiles and light.
To make pale, weary faces bright.
God bless you, Christmas Seals.

TWO GOOD REASONS FOR BUYING CHRISTMAS SEALS



HELP US GROW UP

THE STORIES THE CHRISTMAS SEALS HEARD

The Christmas Seals were in packages in a large room where they had been resting for several days. It was night time and the busy people who had been in the building all day had gone their several ways to the homes here and there in the great, noisy, busy city.

"Why are we here?" said the smallest package of all, "Why are we packed so close and tight that there is scarcely room to breathe and least of all to stretch?"

"Patience, little ones," said the huge packages, "the Spirit of the Double Barred Cross has promised to come tonight and to bring some one with her to tell us a story."

"When the long rays of moonlight touch the wall opposite the window I shall come to you," she said.

Just then the seals noticed the rays of moonlight were peeping through the window and soon they touched the wall.

The door opened and in came the Spirit of the Double Barred Cross. She whose loving, lovely eyes saw the whole world, cared for it, gave it peace and happiness when she could. With her were wonderfully beautiful beings who were made for light and gladness, but who showed only intense sadness.

"Who are you?" said the smallest package of seals to the fairy standing nearest.

"I am Happiness, the heritage of every little child. But there are places I cannot go. In many homes live pale, weak, undernourished little children who know me not, because of hunger, suffering and disease driving me away. Oh dear seals, you can help me fight these enemies of the little children, you can help me bring smiles to their faces, laughter in their hearts, strength to their bodies."

"How can we help?" said all the seals.

"Go out into the world wherever people want you to go, tell them of these little children and they will help you. Will you go?"

"Yes, yes," said all the seals.

"And you, who are you?" said the middle sized packages to the fairy standing nearest them.

"I am Health, the heritage of every

man, woman and child. But often I cannot go where men need me most. Poor food, bad air, overwork, fight me until sometimes I faint, fall and am utterly vanquished. You can help me, dear seals. Will you?"

"Aye! Aye!" said the middle sized packages. "But how?"

"Go out into the world, say to every one who sees you, 'We bring health to the ones who have lost it, strength to the ones from whom it has been taken away!' Say this over and over until people listen to you and believe what you say is true."

"And who are you?" said the great huge packages of seals to the fairy standing nearest them.

"I am the Builder. I help to build hospitals where they who enter find peace and strength again. I need you, dear seals, that they who enter may stay until Health and Happiness come back to them; I need you because there are places I shall never go unless you aid me. Will you help me?"

"Indeed, indeed!" said the great huge packages, "how can we help you?"

"Go out into the world, take this message with you, 'We can help build hospitals where the dwellers on earth may come, find strength and peace.' Say it over and over, again and again, until people believe what you say is true."

Then the Spirit of the Double Barred Cross said, "My children, I knew you would help gladly. Tomorrow you shall be sent wherever men come and go, wherever they work, wherever they play. Tell your message to each and everyone. Tell it again and again until they believe you."

Morning came and the seals found what the Spirit of the Double Barred Cross had told them was true. Here and there they were sent; to many places, under many skies did they go, each one carrying its message of happiness, comfort and cheer. Over and over they gave the message of the seals; again and again they sang their songs of unselfishness until people who saw them believed what they said.

And strangest of all, to everyone who took the seals with them they gave some of their own unselfish spirit.

People carried them away, feeling happier, more at peace with the world, never dreaming that the message of the seals had entered their hearts, making them beat more in tune, making them want to give loving service to all mankind.

The Tuberculosis Christmas Seals are

distributed by the North Carolina Tuberculosis Association in our State and by Tuberculosis Associations in every state in the union.

Every seal you buy or every seal you persuade others to buy helps just that much in conquering The Great White Plague.

THE CHRISTMAS SEALS AND THE MAN

It was evening, the snow had been falling constantly and steadily since early afternoon. Now the drifts seemed to enfold the earth in a robe of soft white that was pure and beautiful.

Before the library fire sat a man, handsome, strong and who had that intangible something which is always recognized as success.

He held a Christmas Seal in his hand. Glancing down at it his thoughts went back to another time when he sat in this same room before this same fireplace with his heart rebellious, bitter, discouraged and feeling there was an unfairness in his days.

Looking at the Tuberculosis Seal he said, "It is to the ones like you who were here in other days that I owe my happiness now. I was ill, fighting, trying to conquer the White Plague and you had a hospital ready for me; to those I loved best, you brought a nurse to tell them how to avoid what had come to me. You made possible the teaching of health habits, you inspired, led and showed them the way to better living. You rescued my baby girl from undernourishment thereby helping her to avoid tuberculosis.

Every color you bear speaks a beautiful message. Your red for the courage it took to persevere, your blue for the faith that it would come out all right in the final summing up, your white for the pure devotion that cheered me when I lost heart, and your sunshine yellow for the hope eternal that kept me fighting until I won. If you could speak and give your message to the world all men would buy you gladly that others might be won back to strength and usefulness.

"You cannot speak, but I shall carry your message for you."

And what happened? He who had drunk the dregs, and found them not bitter because he won, started out,

organized his county, worked with such good will that never in all the years of the seal sales was anybody able to get such returns as he.

You may not have had to fight for health like this man, then your part of the work can be a thank offering because you are well and strong.

The Tuberculosis Association of every state in the union is the distributing center for the Tuberculosis Christmas Seals.

The North Carolina Tuberculosis Association is located at Southern Pines, North Carolina. This year our goal is 8 seals per capita. Will you help North Carolina reach that goal?

"Isn't it strange that princes and kings
And clowns that caper in sawdust rings
And folk like you and me
Are builders for eternity?"

"Each is given a bag of tools,
A shapeless mass and a book of rules,
And each before the day is done
Makes a stumbling block
Or a stepping stone."

Nutrition involves, besides correct diet:

1. The formation and practice of habits essential to health.
2. The acquisition of knowledge necessary to health.
3. The development of right attitudes and ideals with regard to health, both physical and mental.
4. The correction of physical handicaps.

Food cannot make a "six footer" from a "five footer" parentage nor the reverse, but it can make each one healthy and developed to the highest degree.

WHERE DOES SANTA CLAUS GO AFTER CHRISTMAS?

By DWIGHT S. ANDERSON

Where does Santa Claus go after Christmas?

Unless this genial bewhiskered old gentleman can show a good reason for appearing in public but once a year, and then retiring for twelve months into seclusion, he is a fake philanthropist.

His generosity is prodigious, it is true, but it all happens on one night. Publicity he has in plenty; his press agents fairly choke nursery books and daily newspapers with his exploits on Christmas eve. But where is his hide-out at other times?

This is a matter that simply has to be cleared up. In this inquiring age young people are beginning to suspect Santa Claus of being pretty much of an imposter. In some quarters it is doubted whether he personally delivers all the packages that are found at the fireplace Christmas morning; in others it has even been whispered that he is so lazy he gets the inmates of a Home for Rich Old Uncles to lick the Christmas seals he uses to decorate bundles. The spectacular stuff, it is rumored, flatters his vanity, but as for hard work in dull times when the newspapers consider him poor "copy"—Santa Claus simply doesn't deliver the goods.

So the reporter burst into Santa's office one day. He presented his card to the information clerk at a desk in the hallway. She glanced at it as it lay there without taking it up, for both her hands were busy jabbing in telephone calls on the switchboard. The reporter saw at once that whatever Santa's business might be it was a busy business.

Finally ushered into the private office of the head of the concern, the reporter blurted out his errand. "Here, Santa," he said, "is what people are saying about you. How come?"

The room was crowded with children, most of whom were naked to the waist.

Two nurses were weighing a boy on a pair of scales in a corner, writing down his weight as well as height on a chart. Santa himself stood in the center of the room.

"So you're from the newspapers, hey," breezed Santa with one of those worldwide grins of his. "Well, then, I'd better fess up, for you fellows get to the bottom of everything. But make it snappy. I've got twenty more kids to examine before 5 o'clock."

"Where do you go after Christmas?" the reporter asked.



Clothes Often Conceal Signs of Malnutrition

"Lots of places—everywhere, in fact," answered Santa. "Just now I am examining these children for the signs of undernourishment or incipient tuberculosis. That's part of what I do all the year round. On top of that I conduct open-air schools in some places, support preventoria in others, where children can go and live in the open air and sunshine. I am pretty busy almost everywhere with health education in the public schools. The best gift I give is health, and I'm giving it, not only at Christmas, but all year round."

Just then a prim little nurse entered and presented a bill. It read:

S. CLAUS, M.D.

To GREENFIELDS DAIRY, Cr.

Milk for February, 1925\$468.29

Santa reached down in his pocket and pulled out an enormous wallet bulging with green bills. He peeled off enough to pay the account.

"This must be a mighty expensive proposition all over the country," volunteered the reporter.

"Expensive nothing!" he exclaimed, rather ruthlessly. "It brings back the bloom to the cheeks of children. "It's cheap!"

"But where do you get all this money?" the reporter asked.

"Money? The people give it to me when they buy Christmas seals, my boy. A penny at a time the money rolls in. Last year I had the tidy sum of \$4,750,000 to expend in the United States.



"I spend this money differently in different sections of the country—doing whatever is needed in each particular place. I always see that most of the money people give me when they buy my seals stays right where they live and is spent for the benefit of their own community. And I let the people at home decide what it is they need to help their children and their grown-up folks.

"Last summer I was kept busy in a number of places running fresh air camps for poorly nourished children, where the good outdoors, the sun, the air and the right kind of food, built up their reserve strength for the city life in the winter.

"My business is principally one of prevention and, as you see, with special reference to children. One of my favorite diversions is the Modern Health Crusade in the schools of the country. Children joining this honorable order become knights-errant of health in the war on disease. So many children belong, it is almost impossible to count them. I did so a year or two ago, just to find out, and found there were more than two millions."



"But how about the death rate? You've been in this Christmas seal business for almost twenty years now. Have you accomplished anything?"

"I've helped to cut in half the tuberculosis death rate in that time," answered Santa. "One hundred thousand people in this country fail to die each year who would die if the death rate had remained what it was when the little Christmas seal was born. Maybe that's a funny way to put it," he added, laughing with good nature. "Of course I don't mean the same people fail to die each year. But there are that many every year who would be gone if the death rate were double what it is. And it was double twenty years ago."

"Do you collect all this money yourself?"

"Oh, no, no, no; that would be impossible. I have people all over the

country collecting this money for me. There is a representative in every hamlet. You see, the millionaire gives a hundred dollars, and the wage-earner a dollar or two, and the newsboy a couple of pennies. It comes from everybody. And in each section I have a central office where the money is collected and where the work is organized to be conducted all the year round in my absence. I can't be everywhere. In North Carolina my State Headquarters is at Southern Pines and the North Carolina Tuberculosis Association represents me there.

"You'll be surprised to know that there are 1,600 organized tuberculosis associations helping me in this year-round work, and, as well as I can estimate the number, 38,400 volunteer workers who help sell Christmas seals beginning Thanksgiving Day."

"Well, you certainly fooled me," ex-

claimed the reporter. "I came here thinking I was going to unearth a national scandal, and now I find that you are too busy at your work to be tooting your horn all the time, spring, summer and fall. You wait until Christmas when you want money, and then you pull your big publicity stunt with reindeers and all that."

"Confidentially," replied Santa, "the big reason I call on the boys and girls on Christmas eve is to take a peek into their homes while they're asleep and check upon my health work."

Santa shook the reporter's hand. "Glad you came," he said.

The reporter went away thinking that there is a proper time for everything. It isn't always while the band is playing that the soldier is doing his best. It was quite plain that Santa's health factory had steam up in its boilers every day in the year.

HELP BUILD THE FENCE—BUY CHRISTMAS SEALS

'Twas a dangerous cliff, as they freely confessed,
Though to walk near its crest was so pleasant.
But over its terrible edge there had slipped
A duke and full many a peasant.
So the people said something would have to be done,
But their projects did not at all tally.
Some said, "Put a fence round the edge of the cliff;"
Some, "An ambulance down in the valley."

But the cry for the ambulance carried the day,
For it spread through the neighboring city;
A fence may be useful or not, it is true,
But each heart was brim full of pity
For those who slipped over that dangerous cliff;
And the dwellers in highway and valley
Gave pound or gave pence, not to put up a fence,
But an ambulance down in the valley.

"For the cliff is all right if you're careful," they said,
"And if folks ever slip or are dropping,

"It isn't the slipping that hurts them so much
"As the shock down below when they're stopping."
Then an old sage remarked, "It's a marvel to me
"That people give far more attention to repairing results than to stopping the cause,
"When they'd much better aim at prevention.

"Let us stop at its source all this mischief," cried he.
"Come, neighbors and friends, let us rally,
"If the cliff we will fence we might almost dispense
"With the ambulance down in the valley."
"Oh, he's a fanatic," the others rejoined.
"Dispense with the ambulance, never!
"He'd dispense with all charities, too, if he could;
"But no! We'll protect them forever:
"Aren't we picking folks up just as fast as they fall?
"And shall this man dictate to us? Shall he?
"Why would people of sense stop to put up a fence
"While their ambulance works in the valley?"

But a sensible few who were practical, too,
Will not bear with such nonsense
much longer.
They believe that prevention is better
than cure
And their party will soon be the
stronger.
Encourage them, then, with your purse,
voice and pen,
And (while other philanthropists
dally)
They will scorn all pretenses and put
up a stout fence
On the cliff that hangs over the
valley.

NOTE—The last paragraph of this poem was written by Mrs. Louise Brand

of the Wisconsin Anti-Tuberculosis Association.

The National Tuberculosis Association Bulletin makes this startling statement in a recent issue: "While the reduction in the general death rate from tuberculosis in the past ten years has been 36 per cent there has only been an 18 per cent decline in the ages between 15 to 24 years. The death rate for children under five years has declined more than one-half in the decade—while only the slight decline indicated above has taken place among the group of young people. The virulence of the disease, and the pace at which young people live probably accounts for this fact."

GIVE THE CHILDREN OF NORTH CAROLINA AN OPPORTUNITY TO GROW STRONG

If there be any doubt in the mind of the reader as to the danger that lies before us, let him examine with us the following table which shows to what extent defects are present in our school children.

Total number of school chil-	
dren in the United States.....	24,000,000
Defective teeth	18,000,000
Nasal obstruction	7,200,000
Eye strain	6,240,000
Malnutrition	5,000,000
Nervous disorders	5,000,000
Spinal curvature	1,000,000
Defective hearing	1,000,000
Tuberculosis	600,000
Heart disease	300,000

Eighteen million children have carious, or abscessed teeth, defects that can be prevented by thorough brushing and cleaning of the teeth at an early age (plus adequate food, thorough mastication and tooth exercising food—Editor's note). Over seven million have difficulty in breathing because of some nasal obstruction, a defect that, in at least two-thirds of the cases, can be eradicated by surgical treatment. Over six million are inefficient in school on account of eye strain, again a defect which can at least be partially prevented or stopped in its progress by proper lighting in school and at home. Five million children are malnourished, a condition largely preventable by the

application of rational habits of living. Spinal curvature, another defect on the list, is almost entirely preventable by proper habits of standing and sitting. Defective hearing could, in about 75



"'Nobody loves a man with a sneeze,
'Less he covers it up,' says dainty Louise."

per cent of the cases, be prevented by adequate care during and after an attack of a contagious disease. Tuberculosis, well referred to as the poor man's

disease, can be done away with by adequate social and economic conditions in the home. And finally, of the 300,000 children afflicted with heart disease about three-fourths would have been spared, if at the first signs of rheumatism, the tonsils and the adenoids would have been removed.

Experience has taught us that wherever intelligence and foresight control the development of a child, there he is spared the effects and after effects

of many diseases; wherever the efforts of welfare organizations have brought knowledge and education to a community, there the incidence of disease in infants and their death rate has markedly decreased.

With such facts at hand can there be anyone who still will doubt that preventive measures have an enormous influence on the health of the individual?

MAX SEHAM, M.D.

The Nation's Health, October, 1926.

CHRISTMAS SEALS CAN FINANCE THE REMOVAL OR CORRECTION OF PHYSICAL DEFECTS WHERE NO OTHER FUNDS ARE AVAILABLE

Number of Children Given Physical Examination in the School
Years 1925-1926 266,611

These children were all examined by an officially employed full-time school physician or school nurse; or by a part-time officially employed local physician or local nurse; or by a volunteer physician or school nurse.

Correction of defects made by follow-up work of one or more of the individuals who made the physical examination, by teachers or by members of Women's Clubs or Congress of Parent-Teachers:

Removal of diseased tonsils.....	6,552
Dental Corrections	53,851
Orthopaedic Corrections	162
Nutrition corrections bringing the children to correct weight for height	13,139

Defective Vision 1,625
Defective Hearing 272

Correction of physical defects is being given greater attention in our schools this year than ever before. This fine work necessarily must reduce the percentages of underweight in our schools.

"The problem of nutrition is older than the human race. It began when life began upon this planet. The survival of a species of plants and later of animals was conditioned upon their finding proper food and a favorable environment.

"Not only the physical development of man but the fate of nations has been in the past in no small degree dependent upon their ability to solve the food question."—DR. L. EMMETT HOLT.

HOW THE CHRISTMAS SEALS WORKED IN 1925 IN NORTH CAROLINA

1. Furnished milk and hot lunches to approximately 2,000 undernourished children whose parents could not provide them thereby transforming weak, pitiful, pale undernourished children into strong, happy, rosy youngsters.

2. Bought up-to-date scales for over 100 schools, thereby creating an active interest in gaining and growing strong.

3. Paid the salary and expenses of nutrition workers who gave demonstrations that in some instances reduced the percentages of underweight in schools from over 30 to 10 per cent, thereby saving large numbers of children from becoming potential tuberculosis patients.

4. Furnished breakfast, mid-morning and noonday nutrient for a third-grade undernourished boy who stole money to buy food, thereby changing him from a criminal to a good citizen in the making.

5. Financed the anaesthetic and hospital fees for tonsilectomies for over 200 children whose parents were unable to pay even this nominal sum. The surgeons of the State donated their services free of charge. Our hats off to the generous surgeons in North Carolina.

6. Brought Health Training in Schools to over 100 teachers, thereby giving



Mr. and Mrs. -

By Briggs



stories, games, projects and health information to hundreds of school children.

7. Fitted seriously undernourished children with glasses when their parents were unable to pay for them, thereby curing their nervousness and leading them to gaining a healthful weight.

8. Paid the salaries of school dentists and provided funds for dental service.

9. Sent Crusade supplies to over 50,000 school children, thereby helping them to build strong bodies through good health habits.

10. Helped to keep the colored supervisors on the job for a longer period than is provided by law, thereby giving the colored school children additional training in good health habit formation.

11. Provided home nursing and care for tuberculosis patients who could not afford to pay.

12. Paid the expenses of tuberculosis patients at the State, county and private sanatoria.

13. Provided funds for the examination of the pre-school child, thereby helping him to be free to gain before entering school.



DEATHS FROM PULMONARY TUBERCULOSIS BY COUNTY AND RACE

TOGETHER WITH RATES PER 100,000 FOR 1925

Total Deaths, all Forms, 2,750; Rate for State 89.0

County	Number	Rate	White	Rate	Colored	Rate	County	Number	Rate	White	Rate	Colored	Rate
Alamance	20	57.1	11	40.2	9	116.8	Jones	6	56.6	1	16.9	5	106.3
Alexander	8	63.6	6	51.1	2	232.5	Lee	10	68.7	6	57.1	4	100.0
Alleghany	2	27.0	1	14.1	1	300.3	Lenoir	41	122.7	11	58.8	30	204.0
Anson	17	56.7	3	21.1	14	88.6	Lincoln	7	38.3	5	30.4	2	105.2
Ashe	10	45.2	2	10	46.2	-----	Macon	16	120.4	15	116.4	1	299.4
Avery	5	46.6	5	47.9	-----	-----	Madison	10	49.7	10	50.6	-----	-----
Beaufort	23	73.9	4	20.5	19	163.7	Martin	12	53.2	6	48.7	6	58.8
Bertie	21	85.5	3	27.7	18	131.3	McDowell	13	69.9	8	47.9	5	263.1
Bladen	12	57.8	2	15.6	10	125.0	Mecklenburg	85	96.1	28	45.8	57	208.7
Brunswick	6	39.6	2	20.4	4	75.4	Mitchell	1	8.5	1	8.8	-----	-----
Buncombe	384	531.2	322	525.3	62	563.5	Montgomery	11	75.3	5	29.2	6	182.6
Burke	16	65.6	13	59.9	3	111.1	Moore	23	96.3	15	87.7	8	117.6
Cabarrus	20	52.6	11	34.9	9	138.4	Nash	29	64.1	10	38.6	19	98.4
Caldwell	13	62.6	8	43.4	5	210.0	New Hanover	28	61.5	8	28.2	20	116.2
Camden	4	74.3	1	30.7	3	141.1	Northampton	25	105.6	6	63.8	19	132.8
Carteret	13	79.7	10	71.9	3	125.0	Onslow	7	46.5	5	47.6	2	44.4
Caswell	15	92.1	3	36.1	12	150.0	Orange	13	66.6	7	51.8	6	100.0
Catawba	12	32.2	8	23.8	4	111.1	Pamlico	7	77.2	4	68.4	3	93.3
Chatham	20	81.6	8	48.1	12	151.8	Pasquotank	13	71.3	5	46.7	8	106.6
Cherokee	10	63.0	10	63.8	-----	Perquimans	9	80.4	3	51.7	10	136.6	
Chowan	17	159.6	3	56.0	14	264.2	Person	17	85.4	6	53.0	9	104.6
Clay	1	19.7	1	20.0	-----	Pitt	52	102.3	12	48.0	40	155.0	
Cleveland	17	45.9	13	42.2	4	64.5	Polk	4	42.0	3	38.4	1	58.8
Columbus	22	70.2	8	37.5	14	140.0	Randolph	13	41.1	11	39.2	2	55.5
Craven	32	103.2	4	26.1	28	178.3	Richmond	33	114.1	10	56.8	23	203.5
Cumberland	34	89.9	14	69.5	20	111.2	Roheson	40	67.7	12	40.2	24	116.9
Currituck	6	82.5	2	43.1	4	151.6	Rockingham	39	80.3	23	60.8	16	149.5
Dare	7	132.8	6	121.3	1	282.4	Rowan	18	37.6	10	25.9	8	86.0
Davidson	17	44.1	11	31.4	6	171.4	Rutherford	17	51.2	14	48.9	3	66.6
Davie	8	58.4	8	67.7	-----	Sampson	32	81.1	14	54.2	18	132.3	
Duplin	22	66.8	14	67.3	8	66.1	Scotland	21	133.4	3	53.2	18	178.2
Durham	64	138.6	20	61.5	44	321.1	Stanly	15	47.3	10	36.6	5	113.6
Edgecombe	49	118.4	13	74.7	36	150.0	Stokes	11	52.8	8	42.7	3	142.8
Forsyth	115	122.0	33	53.8	82	249.2	Surry	22	64.6	17	53.5	5	220.6
Franklin	21	75.5	7	44.3	14	116.6	Swain	9	60.7	3	21.6	1	943.3
Gaston	32	53.9	25	50.4	7	72.1	Transylvania	3	28.5	2	20.2	1	159.7
Gates	3	28.3	-----	-----	3	56.6	Tyrrell	2	41.2	1	29.6	1	67.7
Graham	2	40.4	2	42.2	-----	Union	23	61.1	10	34.1	13	156.6	
Granville	28	100.6	12	81.0	16	123.0	Vance	23	93.0	7	48.6	16	155.3
Greene	9	50.0	4	46.5	5	53.1	Wake	87	106.2	30	59.0	57	183.2
Guilford	87	96.7	39	54.6	48	260.8	Warren	20	89.5	1	12.1	19	134.7
Halifax	47	99.5	12	58.8	35	130.5	Washington	6	51.5	-----	-----	6	107.1
Harnett	22	69.2	10	43.2	12	137.9	Watauga	3	21.4	3	21.7	-----	-----
Haywood	6	24.0	6	24.8	-----	Wayne	72	149.5	21	77.2	51	244.0	
Henderson	16	82.5	16	91.0	-----	Wilkes	20	58.8	15	47.1	5	227.5	
Hertford	16	95.3	4	63.4	12	114.2	Wilson	57	136.8	5	21.6	52	281.0
Hoke	25	197.5	9	148.5	16	242.6	Yadkin	10	59.0	6	37.9	4	373.4
Hyde	7	83.4	4	78.1	3	91.8	Yancey	9	53.5	8	48.4	1	333.3
Iredell	32	79.9	17	51.9	15	205.4	Total	2,503	89.0	1,214	61.2	1,278	153.9

NOTE—Rate for State of 89.0 is for tuberculosis all forms.

High rates in Buncombe and Hoke counties are attributable to location of government and private sanatoria.

Eleven Indian deaths are distributed as follows: Person 2, rate 112.9; Robeson 4, rate 44.8; Swain 5, rate 578.7. Indian death rate for State, 92.1.

